

# HITACHI

## SERVICE MANUAL

TK

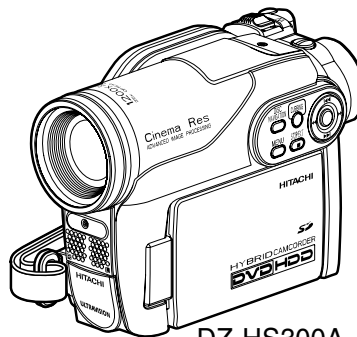
No. 0612E

**DZ-HS303A**  
**DZ-HS303A(K)**  
**DZ-HS300A**  
**DZ-HS300A(K)**

PARTS LIST ADDED



DZ-HS303A



DZ-HS300A

Change 2 (1/17/08) Added PWB Part Numbers to Exploded View (Page 7-2)

**HDD**  
hard disk

**DVD**  
VIDEO  
RAM

**RAM**  
COMPATIBLE



DO NOT RESELL OR DIVERT IMPROPERLY

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

Version 0612E-2  
Updated 01/17/2008

## DVD VIDEO CAMERA/RECORDER

November 2006

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## **B Block Diagram.....B-1**

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**1-1 Cautions****CAUTION**

Lithium battery; danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

When replacing the lithium battery it is important to use the same type and connect it correctly.

**WARNING:**

- Lithium batteries contain dangerous chemicals.
- Handle and dispose of with great care.
- Do not throw in a fire.
- Do not short circuit it.
- For disposal place in a plastic bag and put in waste bin.

**PRODUCT SAFETY NOTICE**

Many electrical and mechanical parts have special safety-related characteristics. These are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for a higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual. Electrical components having such features are identified by marking with a ⚠ on the schematics and the parts list in this Service Manual. The use of a substitute replacement component which does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards. Product safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current HITACHI Service Manual. A subscription to, or additional copies for, HITACHI Service Manual may be obtained at a nominal charge from HITACHI SALES CORPORATION.

CLASS 1  
LASER PRODUCT

**CAUTION**

This product contains a laser diode of higher class than 1. To ensure continued safety, do not remove any covers or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.

**CAUTION**

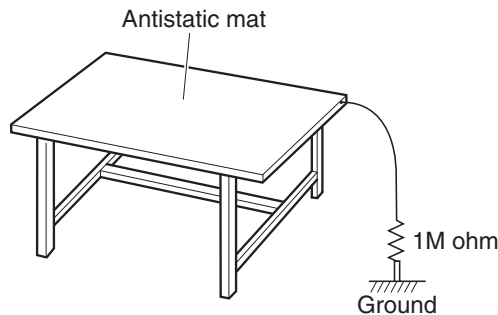
There is a high-voltage section inside the DVD video camera/recorder: When repairing or inspecting it, take great care to prevent electric shock: Use an isolating transformer, wear gloves, etc.

## 1-2 Electrostatic Protection Measures

Semiconductor components can be damaged by static electricity charged on clothes, human body, etc. Take great care when handling components to avoid electrostatic damage, and perform servicing in an environment where grounding is complete.

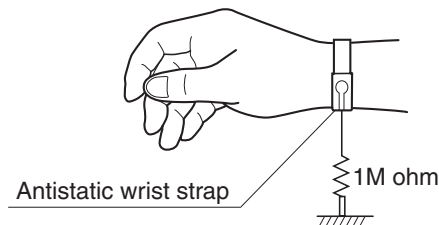
### (1) Grounding work bench

Lay out an antistatic mat on work bench, and then use the ground plate to ground the work bench.



### (2) Grounding human body

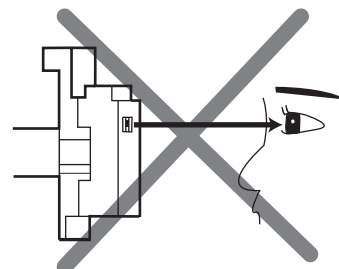
Use an antistatic wrist strap to discharge any static electricity charged on the body. Also, use a tester for wrist strap to make sure that the wrist strap is working normally. Note, however, that static electricity charged on clothes will not be discharged by wrist strap: Therefore do not allow your clothes to touch the semiconductor components.



## 1-3 Cautions When Handling DVD Drive

The optical pickup in DVD drive has a high precision structure: Be sure to observe the following cautions.

- 1) Do not subject optical pickups to any severe vibrations or impact during movement, installation or disassembly.
- 2) When performing repair work, do not perform disassembly any further than that described in this manual.
- 3) Never turn the semi-variable resistors for adjustment in optical pickup or DVD drive.
- 4) NEVER look into the objective lens in optical pickup or directly view the laser light: You could lose your eyesight.



Do not directly look at laser light from pickup.

## 1-4 Cautions When Handling HDD (Hard Disc Drive) for Video Camera/Recorder

A HDD is a delicate device, very susceptible to vibrations or impact. Even if the HDD seems to operate normally immediately after vibrations or impact, a fault may occur after some time.

Therefore, when servicing the DVD video camera/recorder, take special care with the following:

### (1) Cautions when unpacking

- 1) Even if the HDD is still in the packing box, grasp it at the sides or the ends of the box as shown in the figure below: Grasping the top and bottom surfaces of HDD could cause the HDD to be faulty.
- 2) Do not subject the DVD video camera/recorder to any impact when placing it on desk, etc. Which could damage the HDD.
- 3) If condensation occurs, leave the DVD video camera/recorder for at least 3 hours without turning it on, so that it can adapt to the surrounding environment. The disc may be broken.

### (2) Cautions during recording/playback/editing/dubbing

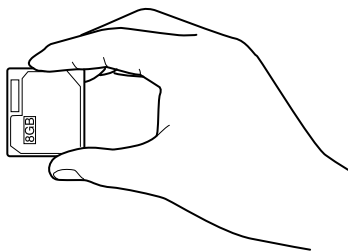
- 1) Do not remove the power supply (battery or AC adapter/charger) during recording, playback, editing or dubbing: Doing so could damage the data on HDD. Always set the power switch to "OFF" before removing the power supply.
- 2) Do not subject the DVD video camera/recorder to any vibration as far as possible during recording, playback, editing or dubbing. Also never strike the DVD video camera/recorder: The head will hit the disk, which could damage the HDD.

### (3) Caution during repacking

- 1) Use the packing material for the corresponding model. This model uses a packing material that is excellent for impact resistance: Using other packing material could result in damage to the DVD video camera/recorder.

### (4) Cautions when handling unassembled HDD

- 1) Hold the HDD at the sides. Holding the top and bottom surfaces of HDD could damage the HDD.
- 2) Do not touch any terminals: Static electricity due to touching could cause a fault.
- 3) Do not hold or place two HDDs on top of each other.
- 4) Do not drop the HDD or hit it against anything. On a hard work bench, a fall from even approx. 5 mm could result in damage.
- 5) Do not place the HDD near a magnetized object: Since the HDD uses magnetic recording, a magnetized object near the HDD could cause the HDD to malfunction or lose data.



## 1-5 Lead-Free Solder


The printed circuit board that uses lead-free solder is adopted. To protect the global environment, use the recommended lead-free solder also during servicing.

Read and observe the following before soldering:

### Caution

ALWAYS wear protective goggles during soldering so that no solder smoke or scattered solder enters the eye. Lead-free solder may scatter at high temperatures of 600°C.

### (1) Identification of circuit boards that use lead-free solder

“ ” is stamped or noted with pattern letter on circuit boards that use lead-free solder.

### (2) Characteristics of lead-free solder

The components of lead-free solder used are as follows. The melting point of lead-free solder is 30-40°C higher than that of lead based solder:

Point to be soldered	Composition of alloy (wt%)
For reflow	Solder paste: Sn-3Ag-0.5Cu
For dip	Bar solder: Sn-0.6Cu

Melting temperature: Approx. 220°C

### (3) Lead-free solder for servicing

Use the following lead-free solder for servicing:

Recommended lead-free solder and composition of alloy (wt%): Sn-3.0Ag-0.5Cu or equivalent

#### Information:

For composition of alloy, Sn is tin; Ag is silver; Cu is copper; Bi is bismuth; Pb is lead.

### (4) Soldering iron for servicing

The temperature of soldering iron tip must be adjusted according to the points to be soldered: Use an antistatic soldering iron with thermal control function.

When removing components, take care not to damage any surrounding component or pattern. When attaching components, observe the heating time in the following table so that the components are not destroyed by heat.

Tip temperatures for different soldering points:

oint to be soldered	Tip temperature
Surface-mounted (chip) parts [other than those shown below]	320 ± 30°C [heating time: less than 5 seconds]
Surface-mounted (chip) parts [for DVD cameras, cellular phones only]	350 ± 10°C [heating time: less than 3 seconds]
Discrete parts	380 ± 30°C
Chassis, metal shield, etc.	420 ± 30°C

### **(5) Cautions when using lead based solder**

It is recommended that you use lead-free solder when servicing, but it is also possible to service using lead based solder. However, if lead based solder is used for servicing, take care with the following:

- 1) Before using lead based solder, remove the lead-free solder completely from the point to be soldered.
- 2) For additional soldering for repair, set the soldering iron tip temperature for lead-free solder, mix lead based solder and lead-free solder sufficiently. Do not perform any repair using the bare soldering iron tip without adding solder, since it will cause secondary failure due to lack of strength.

## 1-6 Notes When Using Service Manual

### (1) Value units used in parts list

Certain symbols are indicated as shown below for value units of resistors, capacitors and coils in parts list. When you read them, note the following regular indications:

Parts	Indication in list	Regular indication
Resistor	KOHM .....	k $\Omega$
Capacitor	UF .....	$\mu$ F
	PF .....	pF
Coil	UH .....	$\mu$ H
	MH .....	mH

### (2) Values in schematic diagrams

The values, dielectric strength (power capacitance) and tolerances of the resistors (excluding variable resistors) and capacitors are indicated in the schematic diagrams using abbreviations. Certain symbols are indicated for value units: When you read them note the regular indications in tables below:

[Resistors]

Item	Indication
Value	No indication ..... $\Omega$
	K ..... k $\Omega$
	M ..... M $\Omega$
Tolerance	No indication ..... $\pm 5\%$ (All tolerances other than $\pm 5\%$ are indicated in schematic diagrams)
Power capacitance	No indication ..... 1/8W (1/16 W for leadless resistors with no indication) All capacitances other than the above are indicated in schematic diagrams.

[Capacitors]

Item	Indication
Value	No indication ..... $\mu$ F
	P ..... pF
Dielectric strength	No indication ..... 50V (All dielectric strengths other than 50 V are indicated in schematic diagrams)

[Coils]

Item	Indication
Value	$\mu$ ..... $\mu$ H
	m ..... mH

### (3) Identifying sides A/B in circuit board diagrams

- 1) Board with pattern on one side only and parts on both sides:

Side A: Shows discrete parts.

Side B: Shows leadless parts, viewed from the pattern side.

- 2) Board with patterns and parts on both sides:

Sides A and B are identified without any predetermined rules.

#### **(4) Indicating model names**

The indication of models is defined as follows:

- 1) The common parts of model names are omitted.

Example: When indicating VM-D975LA and VM-D875LA:

VM-D975LA/D875LA, D975LA/D875LA

- 2) If there is no difference in models going to different destinations, the indication of destination is omitted.

Example: When indicating DZ-MV350E(AU) and DZ-MV350E(SW): DZ-MV350E

#### **(5) Differences in parts between schematic and circuit board diagrams**

If some parts are different between models, asterisks "\*" are attached to the circuit numbers. Check the parts difference tables in diagrams or parts location search system for details.

## 2-1 Overview

The DZ-HS303A/HS300A DVD video camera/recorder incorporates an 8-GB, 1-inch HDD.

Since the DZ-HS303A/HS300A are also compatible with various DVDs (DVD-RAM/DVD-R/DVD-RW/+RW), movies can be not only recorded on DVD or HDD, but a movie recorded on HDD can also be dubbed to a DVD.

The DZ-HS303A uses a CCD image sensor of 3,310,000 total pixels; High-quality stills can also be recorded on an SD memory card (stills can be recorded only on SD memory card).

The following table shows the major differences between DZ-HS303A and DZ-HS300A:

Specification/ Function	DZ-HS303A	DZ-HS300A
CCD Image Sensor	apprpx. 3,310,000 pixel	apprpx. 680,000 pixel
Optical Zoom	x10	x25
Flash	Provided	Not provided
Power/control terminal on accessory shoe	Provided	Not provided
External input function	Provided	Not provided

## 2-1-1 Servicing method

Refer to the following table and perform the designated, appropriate servicing. Any changes that occur in the service method will be published using service bulletin, etc.

Do not perform any servicing other than that described in this manual.

← : Same as on left

Parts Name	Servicing method	
	DZ-HS303A	DZ-HS300A
DVD Drive Unit	Unit replacement	←
HDD Unit	Unit replacement	←
Lens Unit	Unit replacement	←
EVF Unit	Unit replacement	←
LCD Unit	Unit replacement	←
AVJ-H Circuit Board	Component replacement	Not provided
AVJ-L Circuit Board	Not provided	Component replacement
FRT-H Circuit Board	Component replacement	Not provided
FRT-L Circuit Board	Not provided	Component replacement
GSL-3M Circuit Board	Component replacement	Not provided
GSL-L Circuit Board	Not provided	Component replacement
HDF Circuit Board	Circuit board replacement	←
LMF-H Circuit Board	Component replacement	Not provided
LMF-L Circuit Board	Not provided	Component replacement
MAN Circuit Board	Component replacement	←
SDL Circuit Board	Circuit board replacement	←
SHE-H Circuit Board	Component replacement	Not provided

- (a) DVD drive unit
- (b) Lens unit
- (c) EVF unit
- (d) LCD unit
- (e) AVJ-H/L circuit board
- (f) FRT-H/L circuit board
- (g) GSL-3M/L circuit board
- (h) LMF-H/L circuit board
- (i) MAN circuit board
- (j) SHE-H circuit board
- (k) HDD unit
- (l) HDF circuit board
- (m)SDL circuit board

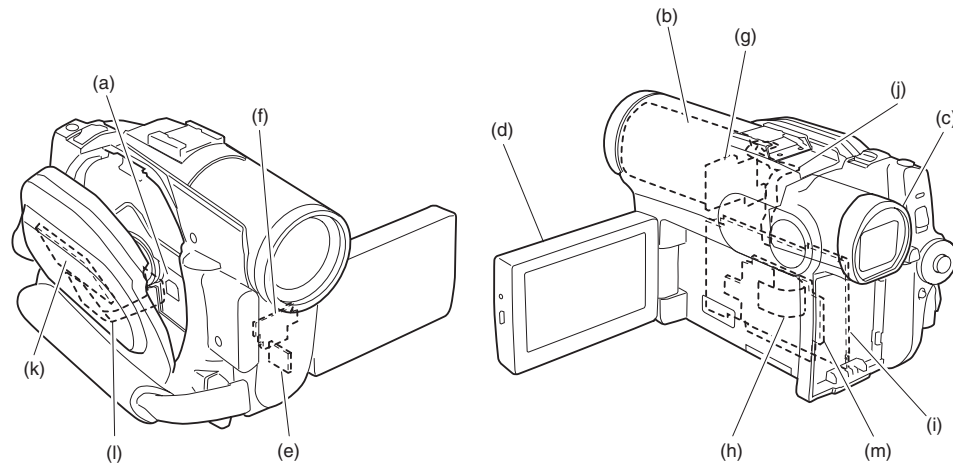


Fig. 2-1-1 Name of the circuit board/unit

## 2-2 Features

### 8-GB, 1-inch HDD built-in

An 8-GB, 1-inch HDD for recording movies is built-in. The recorded movies can be dubbed to a DVD-RAM/DVD-R/DVD-RW/+RW.

### SLEEP/RESTART button:

Pressing the SLEEP button in the recording pause status will shift the DVD video camera/recorder to the SLEEP mode, in which the recording pause status is held using a minimum electric power.

### FINALIZE button:

Simply pressing this button will finalize the recorded DVD-RW, DVD-R and +RW.

### High-quality recording:

- The DZ-HS303A incorporates a mega-pixel CCD image sensor and a high-performance zoom lens.
- Recording in XTRA mode, which is the best movie quality, is possible on all compatible discs.

### 16:9 wide LCD monitor:

A 16:9 wide LCD monitor that corresponds to the wide-screen mode is mounted.

Images in viewfinder are also displayed in wide-screen mode.

### Capturing still:

During movie playback, a desired scene can be recorded on SD memory card as a still.

#### Information:

The DZ-HS303A/HS300A cannot record any stills on a DVD-RAM and HDD. Record stills only on an SD memory card.

## 2-3 Specifications

Item		Specifications	
CCD Image Sensor		DZ-HS303A	1/3-inch interlaced
		DZ-HS300A	1/6-inch interlaced
	Total number of pixels	DZ-HS303A	Approx. 3,310,000
		DZ-HS300A	Approx. 680,000
	Number of effective pixels	DZ-HS303A	Movie: Approx. 2,180,000 Movie in wide mode: Approx. 1,640,000 Still: Approx. 3,050,000
		DZ-HS300A	Movie: Approx. 340,000 Still: Approx. 340,000
Lens		DZ-HS303A	F1.8 – 3.0, f=1/4" – 2-3/8"(6.1 – 61mm)
		DZ-HS300A	F1.2 – 2.8, f=1/16" – 2-3/16"(2.2 – 55mm)
	Filter diameter/ Thread pitch	DZ-HS303A	1 - 7/16"(37mm) / 0.75mm
		DZ-HS300A	1 - 5/16"(34mm) / 0.5mm
Focus			Auto/Manual
Zoom		DZ-HS303A	Optical 10×, 40× – 500× with digital zoom added (40× for still)
		DZ-HS300A	Optical 25×, 100× – 1200× with digital zoom added (100× for still)

Item			Specifications
Required minimum illumination			0.3 lx in Low Light mode
Viewfinder			0.2-inch colour (equivalent to approx. 200,000 pixels)
LCD monitor			2.7-inch colour TFT (approx. 120,000 pixels)
Image stabiliser			Electronic type
Shutter speed			1/4 – 1/4000 seconds (movie)
Self-timer recording			Still recording only
External microphone jack (Not equipped with DZ-HS300A)			ø3.5 mm stereo mini-jack (a plug-in power type microphone cannot be used)
Recording mode			Movie with sound (DVD-RAM/DVD-RW/DVD-R/+RW) Still (SD memory card)
Maximum recordable time	HDD		XTRA mode: Approx. 110 minutes FINE mode: Approx. 180 minutes STD mode: Approx. 360 minutes
	DVD-RAM/DVD-RW/ DVD-R/+RW (per side)		XTRA mode: Approx. 18 minutes FINE mode: Approx. 30 minutes STD mode: Approx. 60 minutes
Maximum number of recordable stills	SD memory card	DZ-HS303A	Camera recording: Approx. 18 (in FINE mode) <sup>(*)</sup>
	(when using 32 MB card)	DZ-HS300A	Camera recording: Approx. 180 (in FINE mode) <sup>(*)</sup>
Recording format	DVD-RAM/DVD-RW (VR-mode)		Movie: Conforming to DVD video recording (DVD-VR) format Sound: Dolby Digital
	DVD-RW (VF-mode)/DVD-R		Movie: Conforming to DVD video format Sound: Dolby Digital
	+RW		Movie: +RW video format Sound: Dolby Digital
	Card		Still: Conforming to JPEG (DZ-HS303A: 2,016×1,512 pixels, DZ-HS300A: 640 × 480 pixels)
Audio playback format			MPEG Audio layer 2, linear PCM, Dolby Digital
Recordable disc			8 cm DVD-RAM disc (conforming to DVD-RAM Ver. 2.1) 8 cm DVD-RW (conforming to DVD-RW Ver. 1.1, 2x speed [2x/1x]) 8 cm DVD-R disc (conforming to DVD-R for General Ver. 2.0) 8 cm +RW (conforming to +RW Ver. 1.2)
Recordable card			SD memory card
Jacks		DZ-HS303A	Video/audio input/output ×1, External microphone input ×1 PC connection terminal (connected to PC USB port) ×1
		DZ-HS300A	Video/audio output ×1 PC connection terminal (connected to PC USB port) ×1
Battery system			Lithium-ion
Power consumption (when recording with LCD monitor off)		DZ-HS303A	Approx. 5.1 W (DVD-RAM used, FINE mode)
		DZ-HS300A	Approx. 3.2 W (DVD-RAM used, FINE mode)
Dimensions (W × H × D, excluding hand strap)		DZ-HS303A	Approx. 2 - 5/8" × 3 - 5/8" × 5 - 3/8" (Approx. 66 × 92 × 136 mm)
		DZ-HS300A	Approx. 2 - 3/8" × 3 - 9/16" × 5 - 5/16" (Approx. 61 × 90 × 135 mm)
Operating temperature (humidity)			32 – 104°F (0 – 40°C) (less than 80%). 32 – 86°F (0 – 30°C) when connected to PC

Item		Specifications
Storage temperature		-4 – 140°F (-20 – 60°C)
Weight (without battery and disc)	DZ-HS303A	Approx. 485 g
	DZ-HS300A	Approx. 435 g
Total weight when recording	DZ-HS303A	Approx. 560g
	DZ-HS300A	Approx. 490 g
Provided accessories		AC adapter/charger (DZ-ACS3) Battery [DZ-HS303A: DZ-BP14S, DZ-HS300A: DZ-BP07PW] AV/S input/output cable [DZ-HS300A is provided with AV/S output cable] Infrared remote control [not provided with DZ-HS300A] Lithium battery for remote control [not provided with DZ-HS300A] Lens cap Lens cap string Shoulder strap Mains lead DC power cord Software CD-ROM PC connection cable Disc cleaning cloth

\*1: May vary depending on the image quality.

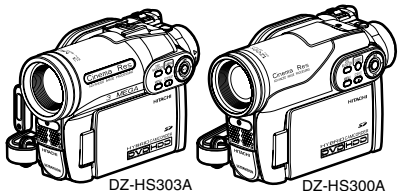
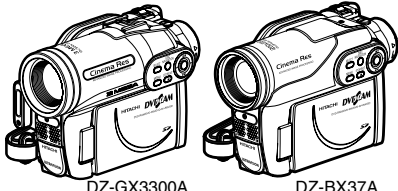
Specifications are subject to change without notice for the purpose of improvement.

### Specifications of AC Adapter/Charger [DZ-ACS3]

Power supply	110 - 240 V AC, 50/60 Hz
Input capacity	19W
DC output (max.)	1.2 A
Charge output	8.4 V, 0.65A
Weight	100 g
External dimensions (W × H × D)	61 × 32 × 91 mm
Ambient temperature for operation	32 – 104°F (0 - 40°C)
Allowable relative humidity	20 - 80%

## 2-4 Major Differences from Previous Models

← : Same as on left

Item	DZ-HS303A/HS300A	DZ-GX3300A/BX37A
Dimensions (W × H × D) and shape (excluding hand strap)	DZ-HS303A: Approx. 2-5/8" × 3-5/8" × 5-3/8"	DZ-GX3300A: ←
	DZ-HS300A: Approx. 2-3/8" × 3-9/16" × 5-5/16"	DZ-BX37A: ←
	 DZ-HS303A      DZ-HS300A	 DZ-GX3300A      DZ-BX37A
Built-in HDD	Provided (8GB 1-inch)	Not provided
Media for recording movies	Built-in 8-GB, 1-inch HDD 8cm DVD-RAM 8cm DVD-RW 8cm DVD-R 8cm +RW	8cm DVD-RAM 8cm DVD-RW 8cm DVD-R 8cm +RW
Media for recording still	SD memory card	8cm DVD-RAM SD memory card
Dubbing (HDD→DVD)	Provided	Not provided
Internal flash	DZ-HS303A: Provided	DZ-GX3300A: ←
	DZ-HS300A: Not provided	DZ-BX37A: ←
Assist light function	Provided (When Low Light mode is selected)	←
16:9 squeeze record mode	Provided [Except for DVD-RW(VF mode)/DVD-R/+RW using, STD mode]	←
Viewfinder	0.2-inch color (equivalent to approx. 200,000 pixels, with 16:9 mode)	←
LCD monitor	16:9, 2.7-inch color TFT (approx. 120,000 pixels)	←
Sleep/Restart button	Provided	←
Finalize button	Provided	←
CCD image sensor	DZ-HS303A: 1/3-inch interlaced	DZ-GX3300A: ←
	DZ-HS300A: 1/6-inch interlaced	DZ-BX37A: ←
	Total number of pixels	DZ-HS303A: Approx. 3,310,000
		DZ-HS300A: Approx. 680,000
	Number of pixels for Movie	DZ-HS303A: Approx. 2,180,000 pixels (in wide mode: Approx. 1,640,000 pixels)
		DZ-HS300A: Approx. 340,000 pixels
Number of pixels for still	DZ-HS303A: Approx. 3,050,000 pixels	DZ-GX3300A: ←
	DZ-HS300A: Approx. 340,000 pixels	DZ-BX37A: ←
Lens	DZ-HS303A: F1.8 - 3.0, f = 1/4" - 2-3/8" (6.1 - 61 mm)	DZ-GX3300A: ←
	DZ-HS300A: F1.2 - 2.8, f = 1/16" - 2-3/16" (2.2 - 55 mm)	DZ-BX37A: ←

Item			DZ-HS303A/HS300A	DZ-GX3300A/BX37A
Zoom			DZ-HS303A: Optical 10x, 40x - 500x with digital zoom added (40x for still)	DZ-GX3300A: ←
			DZ-HS300A: Optical 25x, 100x - 1200x with digital zoom added (100x for still)	DZ-BX37A: ←
Filter diameter / Thread pitch			DZ-HS303A: 1-7/16" (37 mm / 0.75 mm)	DZ-GX3300A: ←
			DZ-HS300A: 1-5/16" (34 mm / 0.5 mm)	DZ-BX37A: ←
Required minimum illumination			0.3 lx (Low light mode)	←
Power consumption (DVD-RAM used, FINE mode)			DZ-HS303A: Approx. 5.1W	DZ-GX3300A: ←
			DZ-HS300A: Approx. 3.2W	DZ-BX37A: ←
Weight			DZ-HS303A: Approx. 485g	DZ-GX3300A: Approx. 470g
			DZ-HS300A: Approx. 435g	DZ-BX37A: Approx. 420g
Maximum time of recordable video (per side)	XTRA		Approx. 18 min/Variable: Approx. 3 - 10 Mbps	←
	FINE		Approx. 30 min/Fix: Approx. 6 Mbp	←
	STD		Approx. 60 min/Fix: Approx. 3 Mbps	←
Number of pixels for video (MPEG2)	XTRA/FINE		720 × 480 pixels	←
	STD		352 × 480 pixels	←
Audio recording format			Dolby Digital	←
Audio playback format			Dolby Digital, MPEG Audio layer 2, Linear PCM (LPCM)	←
Maximum number of recordable Stills	DVD-RAM (FINE)		Not record	DZ-GX3300A: Approx. 650
				DZ-BX37A: Approx. 999
	SD Memory cord (32MB)	FINE	DZ-HS303A: Approx. 18	DZ-GX3300A: ←
			DZ-HS300A: Approx. 180	DZ-BX37A: ←
		NORM	DZ-HS303A: Approx. 24	DZ-GX3300A: ←
			DZ-HS300A: Approx. 240	DZ-BX37A: ←
		ECO	DZ-HS303A: Approx. 37	DZ-GX3300A: ←
			DZ-HS300A: Approx. 370	DZ-BX37A: ←
Number of pixels for JPEG Still during camera recording			DZ-HS303A: 2016×1512 pixels	DZ-GX3300A: ←
			DZ-HS300A: 640×480 pixels	DZ-BX37A: ←
Number of pixels for JPEG Still during external input recording			640 × 480 pixels (DZ-HS303A only)	← (DZ-GX3300A only)
Number of pixels for JPEG Still during capture			16:9 640 × 360 pixels 4:3 640 × 480 pixels	←
PHOTO/SELECT button			Provided (with focus lock function)	Provided (without SELECT function,with focus lock function)
Quick Menu button			Provided	Not provided
SELECT button			Not provided (common with PHOTO button)	Provided
FINALIZE button			Provided	←
DUBBING button			Provided	Not provided
FULL AUTO button			Provided	Not provided
+/- button			Not provided (the zoom lever is used in common to adjust the volume; the cursor keys are used for camera adjustment)	Provided
EIS function			Movie mode only	←

Item	DZ-HS303A/HS300A	DZ-GX3300A/BX37A
Disc protect	Software disc-protect [DVD-RAM, DVD-RW(VR)]	←
HDD Protect	Provided	Not provided
EVF brightness setting function	Provided	←
EVF display on/off function	Provided	←
Accessory Shoe	DZ-HS303A: Provided (with Power/ Control terminal)	DZ-GX3300A: ←
	DZ-HS300A: Not provided	DZ-BX37A: ←
PC connection terminal [USB standard]	Type mini-B [USB 2.0]	←
AC adapter/charger	DZ-ACS3	←
Battery pack	DZ-HS303A provided: DZ-BP14S (7.2V/1360mA)	DZ-GX3300A provided: ←
	DZ-HS300A provided: DZ-DP07PW <sup>(*)</sup> (7.2V/680mA)	DZ-BX37A: ←
	Optional: DZ-BP14SW (7.2V/1360mA) DZ-BP7SW <sup>(*)</sup> (7.2V/680mA)	Optional: ←
Infrared remote control	DZ-RM4W (Battery: CR2032 × 1)	←
AV input/output cable or AV output cable	Pin 8 type (With Composite video/ Audio-L/Audio-R)	←
Provided software	■For Windows <sup>(*)</sup> ImageMixer 3 ■For Macintosh <sup>(*)</sup> Pixe VRF Browser EX, ImageMixer VCD/DVD2	←
Provided disc cleaning cloth	Provided	←

\*1: Unavailable on DZ-HS303A/GX3300A.

\*2: For Windows 2000 Professional SP3 or higher/XP Home Edition/XP Professional

\*3: For DZ-HS303A/HS300A: Mac OS X (10.2.8/10.3.4-10.3.9/10.4.1-10.4.7)

For DZ-GX3300A/BX37A: Mac OS X (10.2.8/10.3.4-10.3.9/10.4.1-10.4.3)

## 2-5 Compatibility of Recorded DVD and Corresponding Recording Media

### 2-5-1 Compatibility of Recorded Discs

#### (1) DVD-RAM

- 1) DVD-RAM recorded or edited on DZ-HS303A/HS300A:

The DVD-RAM can be recorded, edited and played <sup>(\*)1</sup> on other Hitachi DVD video camera/recorders.

- 2) DVD-RAM recorded or edited on other Hitachi DVD video camera/recorders:

The DVD-RAM can be recorded, edited and played <sup>(\*)1</sup> on DZ-HS303A/HS300A.

However, scene memos recorded on the Disc Navigation function of DZ-MV100A cannot be played or edited on another model.

\*1: If disc-protect is set, it must be released in order to record or edit on the disc. However, since the DZ-MV100A and DZ-MV200A series models use a different disc-protect method, disc-protect that was set on other models cannot be released on them.

#### (2) DVD-R

- 1) DVD-R recorded edited on DZ-HS303A/HS300A:

The DVD-R can be played back on other Hitachi DVD video camera/recorders <sup>(\*)2</sup> without being finalized. However, be sure not to record or finalize a DVD-R using other Hitachi DVD video camera/recorders: Doing so will make the DVD-R unusable.

Also, do not insert a DVD-R not finalized into a DVD recorder, etc. <sup>(\*)3</sup>: Inserting it may make the DVD-R unusable.

- 2) DVD-R recorded or edited on other Hitachi DVD video camera/recorders <sup>(\*)2</sup>:

The DVD-R can be played back on DZ-HS303A/HS300A <sup>(\*)4</sup> without being finalized. However, be sure not to record or finalize the DVD-R using DZ-HS303A/HS300A: Doing so will make the DVD-R unusable.

\*2: Only for models that conform to DVD-R. See “Table 2-5-2 List of Compatible Recording Media” for the models that conform.

\*3: Except for DVD recorders, etc. whose instruction manuals state that “This model can play back a DVD-R recorded on Hitachi DVD video camera/recorders but not finalized.

\*4: Loading a DVD-R/DVD-RW(VF mode) will automatically start the Disc Navigation function.

#### (3) DVD-RW (VR mode)

- 1) DVD-RW(VR) recorded or edited on DZ-HS303A/HS300A:

The DVD-RW(VR) can be recorded, edited and played back on other Hitachi DVD video camera/recorders <sup>(\*)5</sup>.

- 2) DVD-RW(VR) recorded or edited on other Hitachi DVD video camera/recorders <sup>(\*)5</sup>:

The DVD-RW(VR) can be recorded, edited and played back on DZ-HS303A/HS300A in the same way.

\*5: Only for models that conform to DVD-RW. See “Table 2-5-2 List of Compatible Recording Media” for the models that conform.

#### **(4) DVD-RW (VF mode)**

1) DVD-RW(VF) recorded or edited on DZ-HS303A/HS300A:

The DVD-RW(VF) can be played back on other Hitachi DVD video camera/recorders <sup>(\*)5)</sup> without being finalized. However, be sure not to record or finalize the DVD-RW(VF) using other Hitachi DVD video camera/recorders: Doing so will make the DVD-RW(VF) unusable.

Also, do not insert a DVD-RW not finalized into a DVD recorder, etc. <sup>(\*)6)</sup>: Inserting it may make the DVD-RW unusable.

2) DVD-RW(VF) recorded or edited on other Hitachi DVD video camera/recorders <sup>(\*)5)</sup>:

The DVD-RW(VF) can be played back on DZ-HS303A/HS300A <sup>(\*)4)</sup> without being finalized.

However, be sure not to record or finalize the DVD-RW using DZ-HS303A/HS300A: Doing so will make the DVD-RW unusable.

\*4: Loading a DVD-R/DVD-RW(VF mode) will automatically start the Disc Navigation function.

\*5: Only for models that conform to DVD-RW. See “Table 2-5-2 List of Compatible Recording Media” for the models that conform.

\*6: Except for DVD recorders, etc. whose instruction manuals state that “This model can play back a DVD-RW(VF mode) recorded on Hitachi DVD video camera/recorders but not finalized.

#### **(5) +RW**

1) +RW recorded or edited on DZ-HS303A/HS300A:

The +RW can be recorded, edited and played <sup>(\*)7)</sup> on other Hitachi DVD video camera/recorders.

2) +RW recorded or edited on other Hitachi DVD video camera/recorders <sup>(\*)7)</sup>:

The +RW can be recorded, edited and played <sup>(\*)7)</sup> on DZ-HS303A/HS300A.

\*7: Only for models that conform to +RW. See “Table 2-5-2 List of Compatible Recording Media” for the models that conform.

## 2-5-2 Corresponding Recording Media

M: Movie  
 S: Still  
 RP: Recording/Playback possible  
 P: Only playback possible  
 N: Non-compatibility

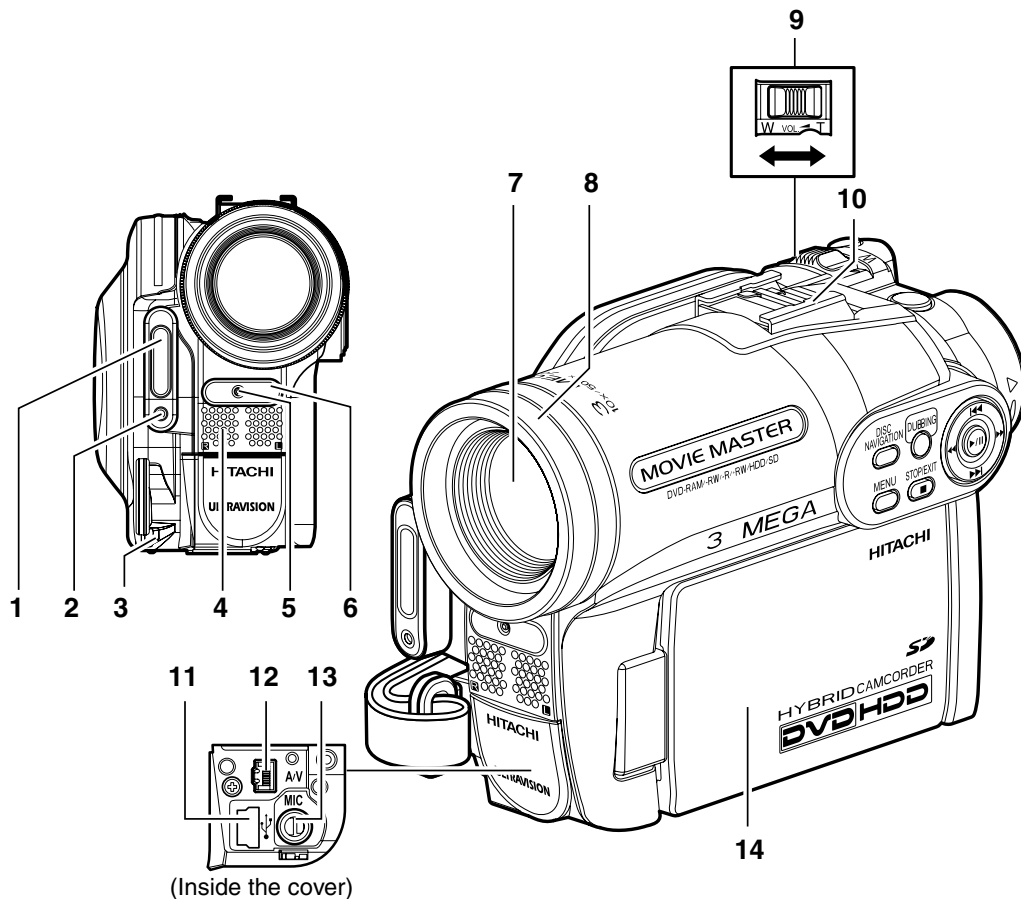
Table 2-5-2 List of Compatible Recording Media

Model	HDD	8 cm DVD					Card		
		DVD-RAM	DVD-R	DVD-RW	+RW	Note	SD memory card	Multimedia card	
DZ-HS303A/ HS300A	M: RP S: N	M: RP S: P	M: RP S: N	M: RP S: N	M: RP S: N	No holder/ cartridge/ caddy case needed	M: N S: RP	N	
DZ-GX3300A/GX3200A/ GX3100A/ BX37A/ BX35A	M: N S: N	M: RP S: RP			N				N
DZ-GX20MA/MV780MA/ MV750MA/BX31A									
DZ-GX20A/ MV780A/ MV730A									
DZ-MV580A/ MV550A				Holder needed	M: N S: RP				
DZ-MV380A/ MV350A									
DZ-MV270A/ MV230A/ MV200A						N	N		
DZ-MV100A						N			

**Note:**

- 1) Do not use a DVD formatted on a device other than DZ-HS303A/HS300A: Such a DVD may be recordable, but it cannot be played back.
- 2) Do not insert a DVD not finalized into other device (except Hitachi DVD recorders or Hitachi DVD video camera/recorders): Simple insertion itself may disable additional recording, playback or finalization.
- 3) Be sure to finalize a DVD on the same device used for recording: Finalizing it on another device could make it unplayable.

## 2-6 Names of Parts



**1 Flash (for DZ-HS303A only)**

**2 Light receiving sensor (for DZ-HS303A only)**

This sensor controls the amount of light to be emitted from the built-in flash. Take care not to block with hand, etc. during recording.

**3 Lens cap string attachment hole**

**4 Stereo microphone**

Take care that the microphone is not blocked by a hand, etc., during recording.

**5 Recording indicator**

The red indicator will light during recording.

**6 Infrared receiver (for DZ-HS303A)**

When the remote control is used to operate the DVD video camera/recorder, this receiver will receive the infrared signal.

**7 Optical 10× zoom lens (for DZ-HS303A only)**

**Optical 25× zoom lens (for DZ-HS300A only)**

**8 Lens hood**

Always remove this lens hood when using the optional tele-conversion or wide-conversion lens.

**9 Zoom lever**

To adjust the zoom or volume.

**10 Accessory shoe (for DZ-HS303A only)**

The optional video flash can be attached here. (See the instruction manual of device to be attached for details.)

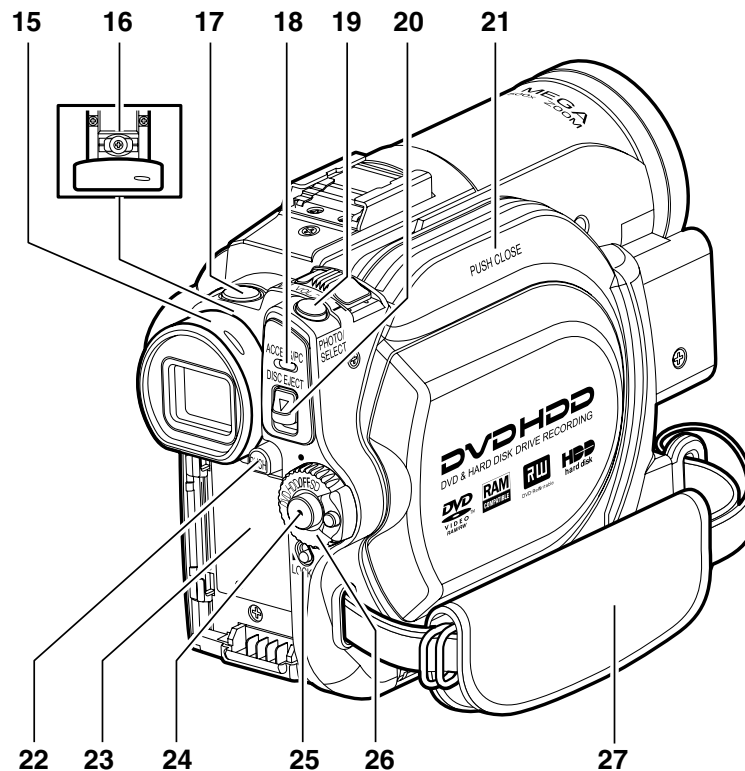
**11 PC connection terminal (TO PC)**

**12 AV in/out/output jack**

**13 External microphone jack (for DZ-HS303A only)**

**14 Wide-screen color liquid crystal display (inside)**

Although the external appearances of DZ-HS303A and DZ-HS300A are different, the method of operating these models is identical. DZ-HS303A illustrations are used in this manual.



**15 Viewfinder**

**16 Diopter control**

To adjust the focus of image appearing in the viewfinder. (Pull out the viewfinder .)

**17 SLEEP/RESTART button**

To switch the sleep/restart status between ON and OFF.

**18 ACCESS/PC indicator**

Will blink or light when the HDD/DVD is accessed (write or read), or the DVD video camera/recorder is connected to a PC.

**19 PHOTO/SELECT button**

**20 DISC EJECT button**

Press down and release this button to open the cover of DVD insertion block.

**21 DVD insertion block**


**22 BATTERY EJECT button**

Press this button when removing the battery.

**23 Battery attachment platform**

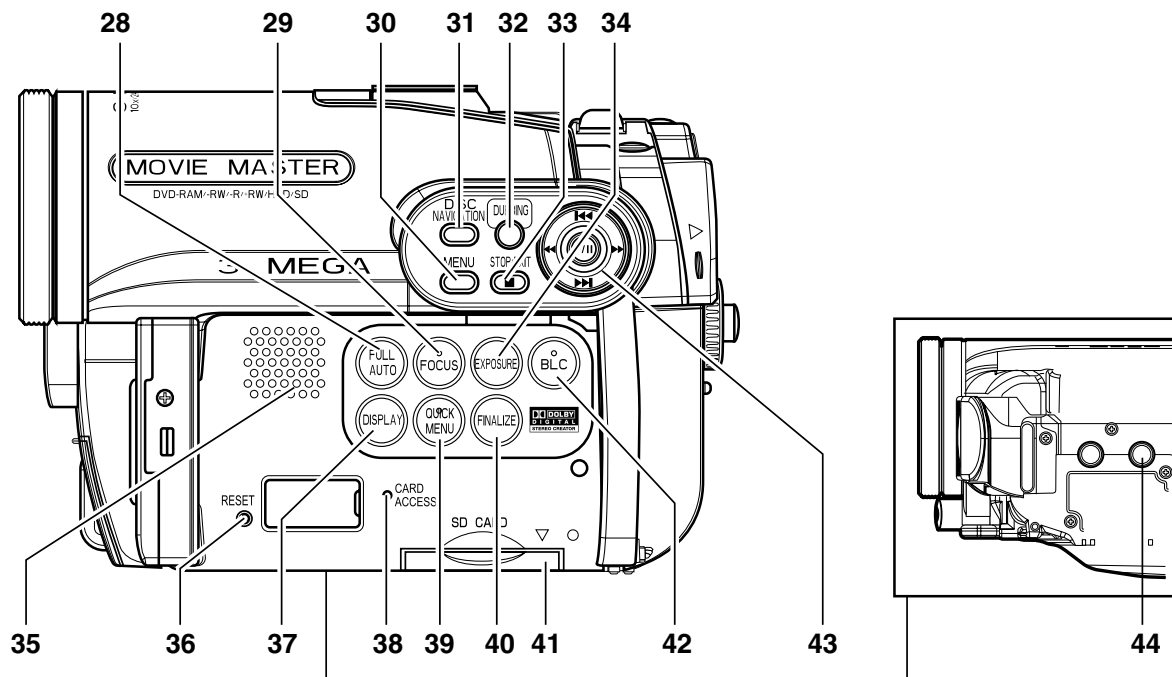
**24 Record button (REC)**

**25 LOCK switch**

It is recommended that you set the LOCK switch to  (to the upper position) to prevent the power switch in the "HDD" position from accidentally moving to "DVD" .

**26 Power switch**

**27 Hand strap**



**28 FULL AUTO button**

To switch the DVD video camera /recorder to full automatic .

**29 FOCUS button**

To switch between manual focus and auto-focus.

**30 MENU button**

Press this button to display the menu for setting camera functions and Disc Navigation.

**31 DISC NAVIGATION button**

**32 DUBBING button**

**33 STOP/EXIT button**

To end playback or cancel setting of menu.

**34 EXPOSURE button**

Press this button to adjust the exposure.

**35 Speaker**

**36 RESET button**

To reset all settings to defaults (status when the DVD video camera/recorder was shipped from the factory).

**37 DISPLAY (Screen display) button**

Press this button to display the details of image being played back or camera setting status, or switch the display off.

**38 CARD ACCESS indicator**

**39 QUICK MENU button**

To display only the functions that you frequently use (simple menus).

**40 FINALIZE button**

Press this button to finalise the recorded DVD- RW/DVD-R/+RW.

**41 Card insertion block**

**42 BLC (backlight compensation) button**

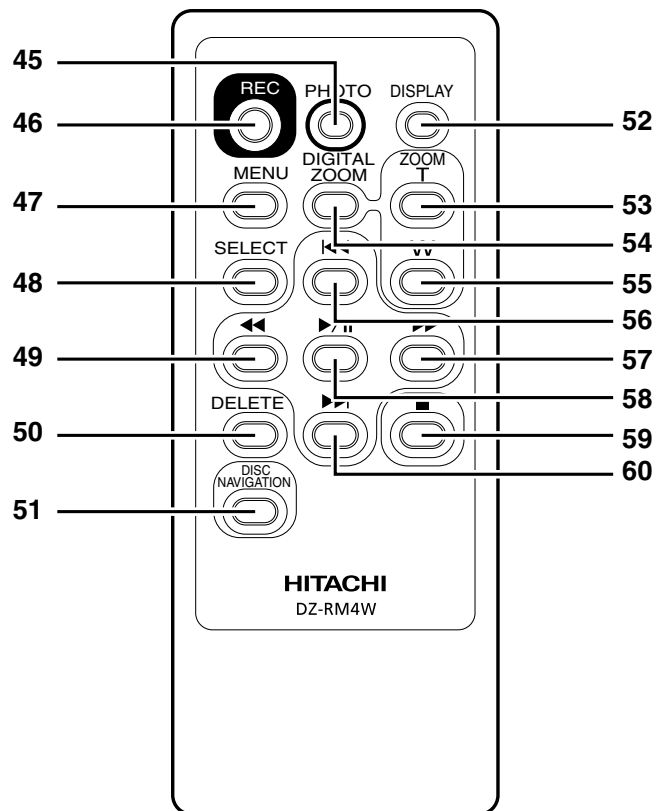
Press this button when subject is being lighted from rear.

**43 ◀◀ / ▶▶ / ◀◀ / ▶▶ / ▶/|| buttons**

Use these buttons to select a scene or menu item, and then press the center (▶/||) to play back the scene, or designate an option from the menu. These buttons are also used to adjust the exposure or focus.

**44 Tripod threaded hole**

Used to attach the DVD video camera/ recorder to a tripod.



**45 PHOTO button**

**46 REC button**

**47 MENU button**

**48 SELECT button**

**49 Reverse search button**

**50 DELETE button**

**51 DISC NAVIGATION button**

**52 DISPLAY button**

**53 ZOOM T button**

**54 DIGITAL ZOOM button**

**55 ZOOM W button**

**56 Reverse skip button**

**57 Forward search button**

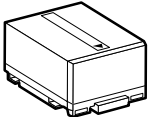

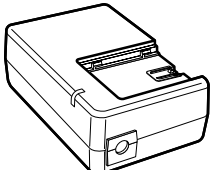
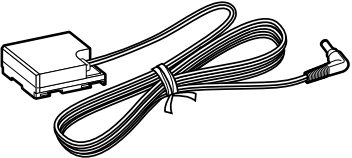
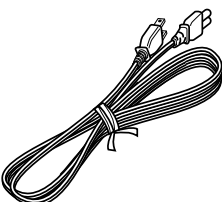
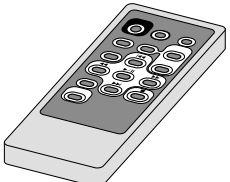
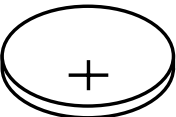
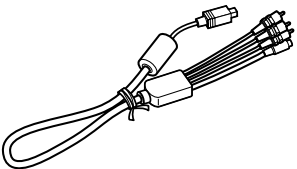
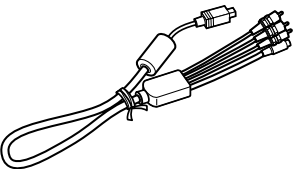
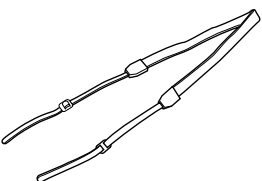
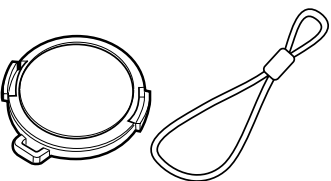
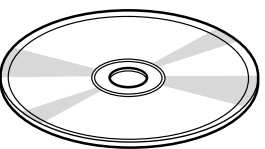
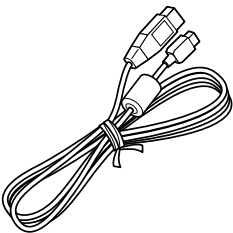
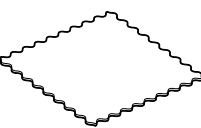
**58 Play/pause button**

**59 Stop button**

**60 Forward skip button**

\* The buttons on remote control will function the same as those on DVD video camera/recorder.

## Accessories

<p><b>Battery (model DZ-BP14S):</b> For DZ-HS303A only.</p> 	<p><b>Battery (model DZ-BP07PW):</b> For DZ-HS300A only.</p> 	<p><b>AC adapter/charger (model DZ-ACS3):</b></p> 
<p><b>DC power cord:</b></p> 	<p><b>Power cable:</b></p> 	<p><b>Infrared remote control (model DZ-RM4W):</b> For DZ-HS303A only.</p> 
<p><b>Lithium battery (model CR2032):</b> For DZ-HS303A only. To power the remote control.</p>  <p><b>WARNING:</b> Keep this battery away from children. If swallowed, consult a physician immediately for emergency treatment.</p>	<p><b>AV/S input/output cable:</b> For DZ-HS303A only.</p> 	<p><b>AV/S output cable:</b> For DZ-HS303A only.</p> 
<p><b>Shoulder strap:</b></p> 	<p><b>Lens cap and lens cap string:</b></p> 	<p><b>Software CD-ROM:</b></p> 
<p><b>PC connection cable:</b></p> 	<p><b>Disc cleaning cloth:</b></p> 	

## 2-7 List of Abbreviations and Terms for DVD Video Camera/Recorders

Index	Abbreviation/Term	Explanation
A	AC3	See Dolby AC3.
C	CPRM	Content Protection for Recordable Media: Copyright protection function that is suitable for online distribution of music.
	CSP IC	Chip Scale Package IC or Chip Size Package IC: This IC was made compact by arranging pins under the package.
D	DCF	Design rule for Camera File system standard: This camera file system standard.
	Dolby AC3	Audio coding format developed by Dolby Laboratories in U.S, also simply referred as AC3 format: Supports 5-channel full-range sound and one channel for sub-woofer sound playback.
	Dolby Digital	See Dolby AC3.
	DPOF	Digital Print Order Format: DPOF allows user to record print information along with photos on storage media to facilitate printing of photos.
	DVD	Digital Versatile Disc. A huge amount of digital data for video (movie) and audio can be recorded on this disc, whose size is the same as CD.
	DVD-Audio	One type of DVD standard disc, on which high-quality audio can be recorded
	DVD-R	One type of DVD standard disc, to which writing once is possible (recordable type)
	DVD-RAM	One type of DVD standard disc, to which writing up to 100,000 times is possible
	DVD-ROM	One type of DVD standard disc, to which data for computer can be recorded
	DVD-RW	One type of DVD standard disc, to which writing up to 1000 times is possible
	DVD-Video	One type of DVD standard disc, on which high-quality video and audio can be recorded
	DVD Video Format	Video recording/playback standard that applies to DVD-Video, DVD-R and DVD-RW
	DVD Video Recording Format	Video recording/playback standard that applies to DVD-RAM and DVD-RW: This allows versatile editing functions, differing from the DVD Video Format.
	DVD-VR Format	See DVD Video Recording Format.
	DVD+RW Video Format	Video recording/playback format for +RW was developed by DVD industry organization "DVD+RW Alliance", which is different from the DVD Forum.
E	Exif	Exchangeable image file format. File format used for recording photos on digital cameras.
F	FireWire	See IEEE1394.
	FNR	Frame Noise Reducer: This function or circuit automatically recognizes noise that randomly occurs between frames and removes it.
I	IEEE1394	Also referred to as FireWire or i-LINK: Standard for serial interface that connects PC and peripheral devices
	Interlaced CCD	This CCD scans one image twice (scans roughly once and interpolates between first scanning lines the second time) and interlaces the images obtained by scanning twice to create a one-image signal.
	i-LINK	See IEEE1394.
J	JPEG	Joint Photographic Expert Group: International standard format for compressing still images
L	LCD	Liquid Crystal Display. LCD formats include STN and TFT.
	LPCM	Linear Pulse Code Modulation. Also referred to as linear PCM. LPCM is a format that digitizes analog audio data during recording and converts it to analog data during playback.

Index	Abbreviation/Term	Explanation
M	MMC	See MultiMediaCard.
	MPEG	Motion Picture Experts Group: Standard related to compression of digital video and audio. MPEG2 is a higher standard of MPEG and is applied to video (movie) requiring higher quality.
	MPEG Audio Layer 2	One of three audio compression standards (layers 1-3) defined by MPEG
	MultiMediaCard	Also referred to as MMC. Compact memory card, 32 mm long × 24 mm wide × 1.4 mm thick
S	SCSI	Small Computer System Interface: A standard for connecting computer and peripheral devices. The number, First, Ultra, Wide, etc., prefixed or suffixed to SCSI indicates the data transfer rate and connector specifications.
	SDMI	Secure Digital Music Initiative: This conference was established by hardware makers, the Recording Industry Association of America (RIAA) and music industry companies, to protect copyrights of musical compositions.
	SD Memory Card	Formally named Secure Digital Memory Card. This compact memory card, 32 mm long × 24 mm wide × 2.1 mm thick, is equipped with an advanced copyright protection function.
	SecureMMC	See Secure MultiMediaCard.
	Secure	Also referred to as SecureMMC. This compact memory card has multimedia card specifications, to which an advanced copyright protection function is added.
	MultiMediaCard	
	Software disc-Protect	This function writes the protect information to DVD-RAM disc to prevent accidental erasure. Software Disc-Protect is included in DVD-RAM disc specifications defined by DVD Forum.
	STN LCD	Super-Twisted Nematic Liquid Crystal Display: This type of color LCD is inferior to TFT LCD in coloring, view angle, etc.
T	TFT LCD	Thin Film Transistor Liquid Crystal Display: This type of color LCD features clear display, high contrast, wide view angle, etc.
U	UDF	Universal Disc Format, which is a file format of recordable disc defined by OSTA. The revision 2.01 UDF is used on DVD video camera/recorder.
	USB	Universal Serial Bus: Standard of serial interface that connects PC and peripheral devices. Two versions - USB1.1 and USB2.0, with different data transfer rates - exist at present.
V	VBR	Stands for Variable Bit Rate: This format of coding audio and video varies the amount of data depending on the subject image.
Etc.	+R	Digital discs whose specifications are established and promulgated by "DVD+RW Alliance", which is an industrial group different from "DVD Forum". +R is recordable, and +RW is rewritable. They are also referred to as DVD+R and DVD+RW.
	+RW	

### 3-1 Description of Structure

The DZ-HS303A and DZ-HS300A DVD video camera/recorders are produced with a one-inch HDD attached to the existing DZ-GX3300A and DZ-BX37A.

Therefore, the configuration and shapes of their structural components/circuit boards closely resemble those of DZ-GX3300A and DZ-BX37A.

#### (1) Difference in structure from DZ-GX3300A/BX37A

R case: Since a HDD is mounted inside the cover of disc insertion block, the shape of the cover is different.

#### (2) Major circuit boards and units

The DZ-HS303A/HS300A include the following circuit boards and units:

(a) DVD drive unit (DRG circuit board):

The DRG circuit board in unit incorporates the DVD drive circuit and the power supply circuit (except for HDD power supply circuit) of the entire DVD video camera/recorder.

(b) Lens unit

(c) EVF unit

(d) LCD unit (LCD circuit board):

The LCD circuit board in unit incorporates the LCD monitor drive and backlight drive circuits.

(e) AVJ-H/L circuit board:

Incorporates the AV output, PC connection and external microphone terminals.

H is for DZ-HS303A and L for DZ-HS300A.

(f) FRT-H/L circuit board:

Incorporates the white balance (WB) sensor, remote infrared receiver (IR) sensor, etc.

The FRT-H circuit board in DZ-HS303A also has a flash circuit.

H is for DZ-HS303A and L for DZ-HS300A.

(g) GSL-3M/L circuit board:

This circuit board connects the CCD image sensor to MAN circuit board. It incorporates an EIS sensor, CCD drive IC, etc.

3M is for DZ-HS303A and L for DZ-HS300A.

(h) LMF-H/L circuit board:

This circuit board connects the SDL circuit board (incorporating a card slot) in L case to MAN circuit board.

H is for DZ-HS303A and L for DZ-HS300A.

(i) MAN circuit board:

Incorporates the circuits that control the entire DVD video camera/recorder, the video/audio signal processing circuit and HDD power supply circuit.

(j) SHE-H circuit board:

This circuit board connects the accessory shoe control/power supply terminal to MAN circuit board.

The SHE-H circuit board is mounted only in the DZ-HS303A whose accessory shoe has a control/power supply terminal.

(k) HDD unit

(l) HDF circuit board:

This circuit board connects the MAN circuit board to HDD unit.

**(m) SDL circuit board**

The SDL circuit board in L case has a card slot. It also relays the LCD and MAN circuit boards.

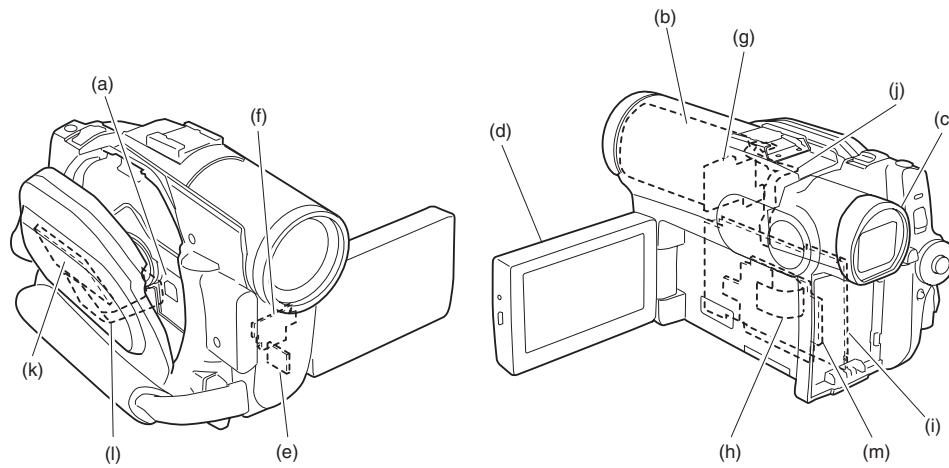


Fig. 3-1-1 Configuration of circuit boards and their mounting locations

## 3-2 Description of Newly Adapted Technology

### 3-2-1 One-Inch HDD

The HDD mounted in DZ-HS303A and DZ-HS300A is a one-inch HDD with 8 GB capacity produced by Hitachi Global Storage Technologies.

#### (1) Specifications

Table 3-2-1 HDD Specifications

Item		Specification
Interface		ATA on MMC
Storage capacity		8 GB
Number of disks		1
Disc rotation speed		3600 rpm
Average seek time (read)		12 ms
Average rotation wait time		8.33 ms
Surface recording density (max.)		163 Mb/mm <sup>2</sup> (105Gb/in <sup>2</sup> )
Data transfer speed (during media recording/playback)		68 – 131 Mb/s
Interface transfer speed		26 MB/s
Data buffer capacity		128 KB
Noise (during idling)		1.8 bels
Power voltage		+2.7 – 3.6V
Current consumption	Read/Write	190 mA
	Peak	310 mA
Impact (applying time)	During operation	400 G (2 ms)
	During non-operation	2000 G (1 ms)
External dimensions (WxDxH)		30 x 40 x 5 mm
Weight		Approx. 13 g

## (2) Recording/playback format

The recording/playback format is similar to that of DVD-RAM for both movie and sound as shown in the table below:

Table 3-2-2 HDD Recording/Playback Format

Signal	Recording/playback format
Movie	Same as in DVD Video Recording (DVD-VR) format
Sound	Dolby Digital
Still	Recording not possible

### 3-2-2 HDD Drop Detection Function (HDD Protection)

The “HDD Protection” function withdraws the HDD head from the disk (stops recording/playback) if the DVD video camera/recorder goes into a weightless condition. The default setting is “On”.

This DVD video camera/recorder will detect weightless condition not only when you are in the air during skydiving, bungee jumping, etc., but also when you jump up and down with the DVD video camera/recorder in hand, or swing your hand holding it at a speed equivalent to its drop speed. There may be momentary HDD head withdrawal time when jumping up/down or hand swing-down, but recording or playback will hardly be affected because of the data that the buffer circuit temporarily saves.

If weightless condition, such as skydiving, lasts a long time, the data temporarily stored in the buffer circuit cannot compensate for recording or playback, so normal recording/playback will not be possible.

Specify “HDD Protection: Off” from the record functions setup menu if you plan to record in a weightless condition for an extended time.

The “HDD Protection: Off” setting will automatically return to “On” when the DVD video camera/recorder is powered next time.

### 3-2-3 Dubbing Button

Used to dub the movies/sounds recorded on the HDD to a DVD by the following procedure:

- Set the power switch to “OFF” or “DVD”, press the DISC EJECT button, and then load a recordable DVD (DVD-RAM, DVD-RW, DVD-R, +RW).

If the power switch is set to “HDD” or “SD”, the DISC EJECT button will not work, but if disc replacement is necessary during dubbing, the DISC EJECT button will work even if the power switch is set to “HDD”.

- Set the power switch to “HDD”, and then press the DISC NAVIGATION button.
- Press the DUBBING button: All scenes recorded on HDD will be dubbed. To select the scenes you wish to dub, press the MENU button instead of the DUBBING Button: From the displayed scene menu, choose “Dubbing”, and execute “Select Scenes”.

The following shows reference for the dubbing speeds. The dubbing speed will vary depending on the movie recording mode. Also, the dubbing speed will decrease when the number of scenes to be dubbed is higher and the temperature inside the DVD video camera recorder is higher:

- XTRA: Approx. normal
- FINE: Approx. 1.5 times the normal
- STD: Approx. 3 times the normal

**Information:**

- 1) Dubbing from DVD to HDD, between HDD and SD memory card, or between DVD and SD memory card is not possible.
- 2) Use the AC adapter/charger to power the DVD video camera/recorder during dubbing. The DVD video camera/recorder is designed so that dubbing is not possible when a battery is connected, since turning power off during dubbing could cause a fault in playback.
- 3) Dubbing may not be possible, depending on the type of DVD used for dubbing, the quality or aspect ratio of the movie recorded on HDD. See Table 3-2-3 for details.

Table 3-2-3 List of Dubbing Possible / Impossible

OK: Dubbing possible

NG: Dubbing not possible

DVD used for dubbing	Movies on HDD			
	VIDEO Modes (XTRA/FINE/STD) mixed	16:9 and 4:3 screens mixed	VIDEO Mode FINE and wide-mode (16:9)	Conditions other than those on left
DVD-RAM	OK	OK	OK	OK
DVD-RW (VR-mode)	OK	OK	OK	OK
DVD-RW (VF-mode)	NG	NG	NG	OK
DVD-R	NG	NG	NG	OK
+RW	OK	OK	NG	OK

**3-2-4 FULL Auto Button**

The FULL AUTO button sets the following settings to AUTO or ON all at once:

- Program AE
- White balance
- EIS
- Digital zoom
- Focus

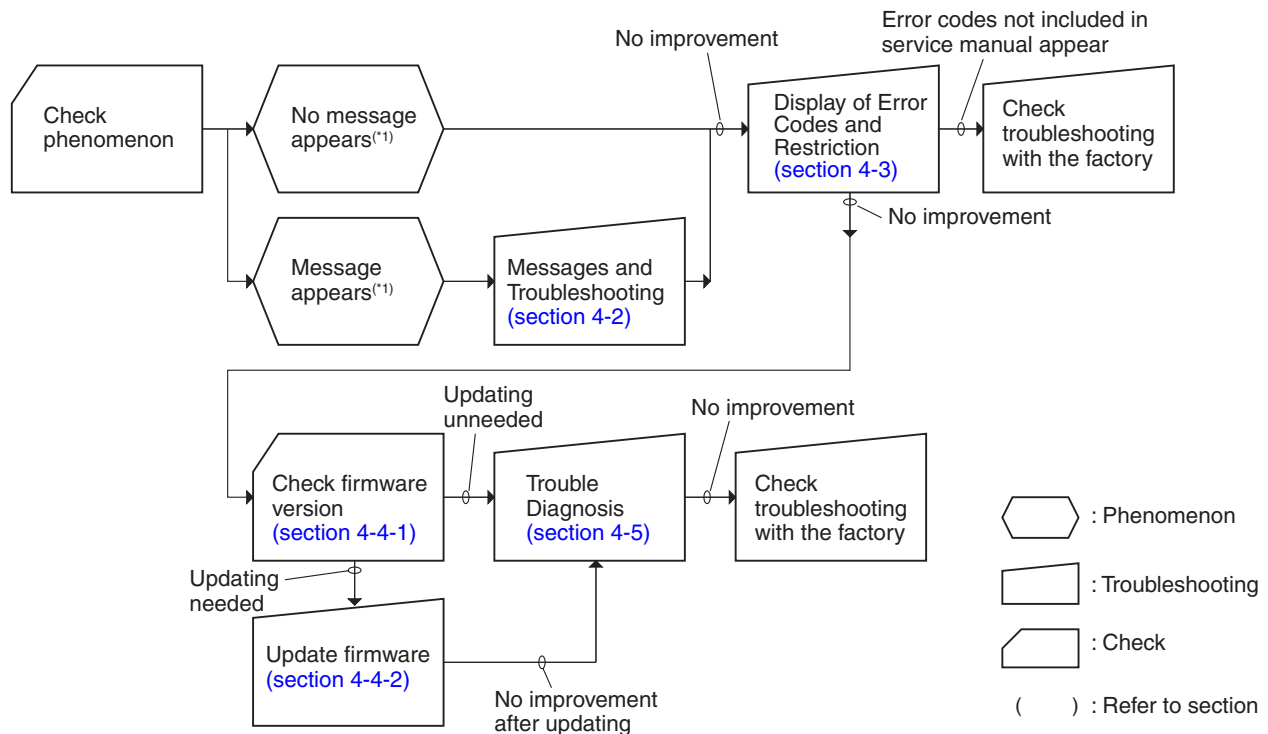
# 4 Troubleshooting

## 4-1 Procedure for Troubleshooting

Perform troubleshooting in the order shown in Fig. 4-1-1.

**Note:**

- 1) Before troubleshooting or servicing, be sure to obtain customer approval for the following:
  - a) The recorded contents on DVD/HDD may be lost depending on the details and situation of fault (defect).
  - b) The date/time and various settings, including video recording mode, designated by customer after purchase, may be reset to the defaults before purchase (factory settings).
- 2) Perform “4-7-2 System reset procedure” after repair is completed: Note that system reset will erase all error codes that will be necessary for troubleshooting.
- 3) Take notes of settings on received product in the Memo columns, referring to “Table 4-7-1 List of items to be reset”: These notes will be necessary not only for reset, but for checking any defects that occur under the particular setting conditions.



\*1: Messages and error codes will appear on LCD monitor or in viewfinder.

Fig. 4-1-1

## 4-2 Messages and Troubleshooting

Some messages may appear on the LCD screen or in the viewfinder during operation. If a message appears, check the following, and then perform the appropriate action, according to the message content:

- 1) Is the disc bottom/surface reversed when using a single-sided DVD?  
If so, reload the disc properly.
- 2) Is there any condensation on the lens or in the DVD drive unit, HDD of DVD video camera/recorder?  
Condensation will occur when the DVD video camera/recorder is moved from a cold place to a warm place, e.g. If condensation occurs, set the power switch to "OFF" with the DVD loaded, and then leave the DVD video camera/recorder in a dry place until condensation disappears (for 1-2 or more hours).

The messages divided using broken lines in the table can be displayed in sequence from the upper row by pressing the ►/II button.

Message	Cause/condition for message to appear	Troubleshooting
Auto finalizing... Please wait...	Appears if the DISC EJECT button is pressed after recording on a +RW ends. Also appears if the DISC EJECT button is pressed after a scene recorded on a +RW is deleted.	Operate the DVD video camera/recorder when the message disappears and finalizing ends.
Cannot combine scene.	Appears if an attempt is made to combine unconnected scenes: The specifications state that combining of only multiple scenes is possible.	Stop trying to combine scenes, or create a play list containing the scenes to be combined, and combine them on the play list.
Cannot combine scene of multiple programs. Create Playlist first, and then combine scenes.	Appears when combining the scenes in different programs was attempted.	When combining those scenes, first create a play list, and then combine the scenes on it.
Cannot combine. Deselect PHOTO scenes.	Appears if an attempt is made to combine scenes when a photo was selected: The specification state that combining of only video scenes is possible.	Select only video scenes, or stop trying to combine scenes.
Cannot combine. Select multiple scenes.	Appears when combining one scene was attempted.	Select multiple scenes and then combine them.
Cannot delete scenes.	Appears when user performed deletion at the upper limit of 999 scenes registered. [Refer to *1 page 4-13]	Combine divided scenes, and then delete if necessary. [Refer to *2 page 4-13]
Cannot divide scenes	Appears if an attempt is made to divide an very short scene. If division of scenes is repeated, an extremely short scene may be generated.	Give up the division of scene.
Cannot execute. Change display category to All.	Appears when combining or moving scenes was instructed with "Category: Movie or Still" specified.	Specify "Category: All", and then operate the DVD video camera/recorder again.
Cannot execute. Unselect multiple scenes.	Appears if an attempt is made to select multiple scenes for division: The specifications state that dividing multiple scenes is impossible.	Divide scenes one by one.

Message	Cause/condition for message to appear	Troubleshooting
Cannot finalize DVD in HDD mode. Please finalize DVD in DVD mode .	Appears if the FINALIZE button is pressed with the power switch set to "HDD": Finalizing a DVD is not possible with the power switch set to "HDD".	Set the power switch to "DVD", and then press the FINALIZE button.
Cannot read DVD. Check dirt/crack/bothsides contrary/inserted correctly.	Appears when reading or writing any recorded files cannot be done due to dirt on DVD. Appears when a warped or distorted DVD, or a logically damaged disc, whose initialization was previously interrupted, is loaded.	Refer to "4-3-5 Cleaning DVD and optical pickup" and clean the DVD. Or replace the DVD. Replace the DVD.
CANNOT RECORD PHOTOS	Appears if an attempt is made to record a still with the power switch set to "DVD" or "HDD". Models DZ-HS303A/HS300A cannot record stills on a DVD or the HDD.	Load an SD memory card, set the power switch to "SD", and then record stills on the SD memory card.
CANNOT RECORD VIDEO	Appears if an attempt is made to record a movie with the power switch set to "SD". Models DZ-HS303A/HS300A can record only stills on an SD.	Set the power switch to "HDD", or load a DVD, set the power switch to "DVD", and record a movie on the HDD or DVD.
Cannot replace thumbnail on PHOTO scenes.	Appears when a photo thumbnail was selected for change in scene editing menu: The specifications stipulate that the thumbnail of still cannot be changed.	Select a movie to change the thumbnail.
Cannot select any more scenes	Appears when the number of scenes selected on card has exceeded the upper limit of 999 scenes.	Release the selection of unnecessary scenes.
CANNOT SLEEP MODE	Appears when the DVD video camera/recorder cannot enter the SLEEP mode because it is set to the recording pause status for any of the following reasons: • No DVD or SD memory card is loaded. • The loaded DVD or SD memory card has a little free space. • The HDD or DVD is writeprotected.	<ul style="list-style-type: none"> <li>• Load an SD memory card.</li> <li>• Replace it with a DVD or SD memory card that has sufficient free space, or remove unnecessary scenes.</li> <li>• Release the protection from the HDD or DVD.</li> </ul>
CARD ALMOST FULL	Appears when the remaining number of recordable stills has reached less than 10 during recording.	Prepare another card, or delete unnecessary stills.
Card error has occurred.	Appears when the card cannot be recognized because its terminals are dirty. Also appears when data other than photos is recorded on card.	Use a dry cloth to clean the card terminals. Replace the card.
Card error has occurred. Format the card now? YES NO	Appears when a card initialized on PC, etc., or a card whose initialization was interrupted before, is loaded.	Choose "YES" and designate it to initialize the card (deleting all recorded data).
Card error has occurred. Formatting is not complete.	Appears when a damaged card is initialized.	Replace the card.
Card error has occurred. Keep card inside & restart.	Appears when an error occurred during editing of still files.	Set the power switch to "OFF", and after several seconds, set it to "SD".

Message	Cause/condition for message to appear	Troubleshooting
Card full.	Appears when the recording capacity of card has reached the limit during recording.	Replace the card, or delete unnecessary stills.
	Appears when a card whose remaining recording capacity is small, and on which no still can be recorded, is loaded.	Replace the card, or delete unnecessary stills.
	Appears when the remaining capacity of card has reached the recordable limit.	Replace the card, or delete unnecessary stills.
Card is not formatted. Format the card now? YES NO	Appears when an unformatted card or a card formatted on PC was loaded.	Choose "YES" and designate it when formatting card (deleting all recorded data).
CHECK DVD	Appears when disc that cannot be used on that cannot be used on the DZ-HS303A/HS300A, or logically damaged DVD (warped or distorted), was loaded.	Check the type of DVD, and for scratch or distortion on DVD: If the DVD is scratched or distorted, replace it.
	If the type of disc is acceptable, and there is no scratch or distortion, the DVD may be defective.	Replace the DVD.
CHECK HDD	Appears when a fault in HDD is detected.	If HDD protection has been engaged, release it. If HDD protection has not been engaged, replace the HDD.
Control Information Error.	Also appears when reading or writing from/to recorded file cannot be performed because the DVD is dirty.	Refer to "4-3-5 Cleaning DVD and optical pickup" and clean the DVD. Or replace the DVD.
	Appears when mismatch between recorded scene and scene information occurs. Such a mismatch occurs when editing is performed near the limit of disc storage capacity, or when the control information file is operated using a device other than the DZ-HS303A/HS300A.	Update the control information. (Start Disc Navigation, press the MENU button, and then execute "Update Control Info." in the "DVD Setting" menu.
Data error in a part of image file. Repair data now? YES NO	Appears when reading/writing of recorded files cannot be performed because the DVD is dirty. If the message appears immediately after recognition of a loaded, recorded DVD was finished, first check for dirt on DVD.	Refer to "4-3-5 Cleaning DVD and optical pickup" and clean the DVD. Or replace the DVD.
	Appears if writing to file cannot be completed normally because power was turned off by mistake during movie recording or editing, and an abnormality in part of the file is recognized.	Choose "YES" and designate partial repair (automatic repair) of movie file. Choosing "NO" will display a message for verifying initialization. [Refer to *3 page 4-13]

Message	Cause/condition for message to appear	Troubleshooting
Data error in all image file. Repair all data now? YES NO	Appears when reading/writing of recorded files cannot be performed because the DVD is dirty. If the message appears immediately after recognition of a loaded, recorded disc was finished, first check for dirt on DVD.	Refer to “4-3-5 Cleaning DVD and optical pickup” and clean the DVD. Or replace the DVD.
	Appears if writing to file cannot be completed normally because power was turned off by mistake during movie recording or editing, and it is recognized that the movie file must be totally repaired.	Choose “YES” and designate total repair (automatic repair) of movie file. Choosing “NO” will display a message for verifying initialization. [Refer to *3 page 4-13]
Dubbing is not complete	Appears when dubbing has failed.	Retry dubbing. Replace the DVD.
Drive overheat. Please retry later.	Appears when the temperature inside the DVD video camera/recorder, or the temperature of DVD, is too high, and normal operation cannot be executed.	Set the power switch to “OFF” with the DVD loaded, and then leave the DVD video camera/recorder in a well-ventilated place until the inside temperature decreases.
DVD ACCESS	Message displayed during normal operation	Operate the DVD video camera/recorder after the message disappears. If the message does not disappear, see “4-5 Trouble Diagnosis”.
DVD error has occurred. Finalizing is not complete.	Appears when the DVD could not be finalized because it was dirty.	Refer to “4-3-5 Cleaning DVD and optical pickup” and clean the DVD. Or replace the DVD.
	Appears if accident, such as power off, has occurred during finalizing.	Set the power switch to “OFF” and reconnect the AC adapter/charger; then set the power switch to “DVD” and start finalizing again. Or press
	If the message still appears even when the DVD has been cleaned and finalized again and again, the DVD may be defective.	Replace the DVD.
DVD error has occurred. Format the DVD now? YES NO	Appears when reading or writing from/to recorded file cannot be performed because the DVD is dirty.	Refer to “4-3-5 Cleaning DVD and optical pickup” and clean the DVD. Or replace the DVD.
	Appears when a DVD-RAM/DVD-RW/+RW initialized on PC, etc., or a card whose initialization was suspended before, is loaded.	Choose “YES” and designate it to initialize the DVD-RAM/DVD-RW/+RW (deleting all recorded data).
DVD error has occurred. Formatting is not complete.	Appears when the DVD could not be normally formatted because it was dirty.	Refer to “4-3-5 Cleaning DVD and optical pickup” and clean the DVD. Or replace the DVD.
	Also appears when a warped or distorted DVD was loaded, or a logically damaged DVD whose formatting was suspended is loaded.	Replace the DVD.

Message	Cause/condition for message to appear	Troubleshooting
DVD error has occurred. Keep DVD inside & restart.	Appears if a problem has occurred during editing of movie file.	Exit the Disc Navigation function and set the power switch to "OFF" with the disc loaded; then reconnect the AC adapter/charger and set the power switch to "DVD". (The DVD video camera/recorder will automatically repair the video file.)
DVD error has occurred. Please keep DVD inside and set power switch to "DVD".	Appears when writing files to DVD was not possible during dubbing.	Connect the AC adapter/charger, and set the power switch to "DVD". (The DVD video camera/recorder will automatically repair video files.)
DVD error has occurred. Unfinalize is not completed.	Appears when a recorded file cannot be read or written. If no recovery is made even when the DVD is cleaned or unfinalized again, the DVD may be defective.	Clean the DVD, referring to "4-3-5 Cleaning DVD and optical pickup", or replace it.
	Appears when an accident, such as power off, occurred during unfinalizing.	Set the power switch to "OFF", reattach the AC adapter/charger, set the power switch to "DVD", and then unfinalize the disc again. Or, press the DISC EJECT button to remove the DVD, reload it, and then unfinalize it again.
	If no recovery is made even when the DVD is cleaned or unfinalized again, the DVD may be defective.	Replace the DVD.
DVD error has occurred.	Also appears when reading or writing from/to recorded file cannot be performed because the DVD is dirty.	Refer to "4-3-5 Cleaning DVD and optical pickup" and clean the DVD. Or replace the DVD.
	Appears when the disc has been edited on a device other than the DVD video camera/recorder, and mismatch has occurred in recorded data.	Format the disc (deleting all recorded data), or replace the disc.
DVD full. Cannot execute.	Appears if the recording capacity of DVD has reached the limit during editing of video file.	Delete unnecessary scenes, or replace the DVD.
DVD has no data.	Appears when playback or editing is attempted using the Disc Navigation function with no scene recorded on DVD.	Operate the DVD video camera/recorder after the message disappears.
DVD has no Play List.	Appears if switching of play list is selected with no play list registered.	Operate the DVD video camera/recorder after the message disappears.

Message	Cause/condition for message to appear	Troubleshooting
DVD includes protected scenes. Delete scenes? YES NO	Appears if the loaded DVD has a program (scene) that is write-protected by the software write-protect function, which is effective in program units. Although the DVD video camera/recorder is equipped with a software disc-protect function that is effective for disc units, it does not comply with software write-protect for program units. (The DVD Forum defines two types of software protect for DVD-RAM: disc units and program units.)	Release the write-protect using the device that has the software write-protect function for program units, or choose “YES” and designate it to delete the scenes.
	Appears when the card contains a scene write-protected by a device other than this DVD video camera/recorder.	Release the write-protect using the device which set it. Or choose “YES” and delete the scene.
DVD is full. Cannot add control info.	Appears if the number of scenes on play list exceeds the upper limit (999) while control information is being added. [Refer to *1 page 4-13]	Delete any unnecessary scenes, or combine several scenes, and then operate the DVD video camera/recorder.
DVD is not formatted. Format the DVD now? YES NO	Appears when a brand-new DVD-RW/+RW was loaded.	When recording on the DVD video camera/recorder, choose “YES/VR Mode/VF Mode” and designate it.
[Displayed only when DVD-RW is used] DVD format. Select record format. VR mode VF mode	Appears when reading or writing from/to recorded file cannot be performed because the DVD is dirty.	Refer to “4-3-5 Cleaning DVD and optical pickup” and clean the DVD. Or replace the DVD.
	May appear when a DVD formatted and recorded on a device other than DVD video camera/recorders is loaded.	Use a PC, etc. to check the contents on DVD.
	Appears when an unformatted DVD-RAM/DVD-RW/+RW or one initialized (other UDF2.0) on PC is loaded.	When initializing it (deleting all recorded data), choose “YES” and designate it.
	Also appears if user rejects partial repair or total repair of video file.	Choose “NO” and designate partial repair or total repair. When initializing it (deleting all recorded data), choose “YES” and designate it.
DVD must be finalized before it can be played back on DVD player or DVD recorder.	Appears if a non-finalized DVD-RW(VF)/DVD-R is removed.	Finalize the DVD-RW(VF)/DVD-R before playing it back on another DVD device.
DVD-R, 16:9 mode cannot be changed, when Video mode is STD	Appears when the wide-screen mode was chosen with the video quality set to STD using a DVD-RW (VF mode)/DVD-R/+RW: The combination of STD (352 × 480 pixels) and wide-mode is prohibited by the DVD video format.	Change the video quality to XTRA or FINE when using a brand-new DVD-RW/DVD-R/+RW. If the DVD-RW/DVD-R/+RW has already been recorded in STD mode, replace it.
DVD-RW (VF) , 16:9 mode cannot be changed, when Video mode is STD		
DVD+RW, 16:9 mode cannot be changed, when Video mode is STD		

Message	Cause/condition for message to appear	Troubleshooting
DVD-R cannot dub the scene recorded in STD mode and 16:9.	Appears if an attempt is made to dub a movie with both STD quality and 16x9 to a DVD-RW(VF)/DVD-R/+RW from HDD. The DVD video format prohibits the combination of STD (352x480 pixels) and 16x9 screen modes	Replace the disc with a DVD-RAM or DVD-RW(VR), or select a movie that can be dubbed.
DVD-RW (VF) cannot dub the scene recorded in STD mode and 16:9.		
+RW cannot dub the scene recorded in STD mode and 16:9.		
DVD-R, Different video mode, 16:9 and 4:3 mode cannot exist together.	Appears if an attempt is made to dub movies with 4x3 and 16x9 screen modes mixed to a DVD-RW(VF)/DVD-R from HDD. The DVD video format (DVD-RW(VF)/DVD-R) prohibits mixing of 4x3 and 16x9 screen modes	Replace the disc with a DVD-RAM or DVD-RW(VR), or select a movie that can be dubbed.
DVD-RW(VF), Different video mode, 16:9 and 4:3 mode cannot exist together.		
DVD-R, Video mode and 16:9 mode cannot be changed.	Appears when an attempt was made to change the video quality or wide mode of recorded DVD-RW (VF mode)/DVD-R. This is because, if even one scene is recorded after a disc is formatted, the specifications state that the video quality or wide mode used for the first recording will be held on the DVD-RW (VF mode)/DVD-R.	Stop trying to change the video quality or wide mode, or replace the DVD.
DVD-RW (VF) , Video mode and 16:9 mode cannot be changed.		
DVD-RAM. Finalize is not required.	Appears when the FINALIZE button was pressed with a DVD-RAM used.	A DVD-RAM does not need to be finalized. Wait until the message disappears.
END OF DVD	Appears if the DVD recordable capacity has reached the limit during recording.	Replace the DVD.
Error occurred. Please format HDD.	Appears when repair of video files failed.	Format the HDD (formatting will delete all data on HDD).
Error occurred. Please replace DVD or format DVD.	Also appears when reading or writing from/to recorded file cannot be performed because the DVD is dirty.	Refer to "4-3-5 Cleaning DVD and optical pickup" and clean the DVD. Or replace the DVD.
	Appears if repair has failed with DVD-RAM/DVD-RW/+RW after message "Data error in all image file. Repair all data now?" or "Found error in image file. Repair data now?" appeared.	Initialize the disc (deleting all recorded data), or replace the disc.
Error occurred. Please replace DVD.	Appears if repair has failed with DVD-R after message "Data error in all image file. Repair all data now?" or "Found error in image file. Repair data now?" appeared.	Replace the DVD.
Finalize may not be complete. Finalize again now? YES NO	Appears if accident, such as power off, occurred during finalizing, and then power was turned on again or DVD was reloaded.	Choose "YES" and designate it to finalize the DVD.

Message	Cause/condition for message to appear	Troubleshooting
First scene is too large. Divide it.	Appears if an attempt is made to dub a movie whose recording length exceeds the recordable duration of one side of DVD, from HDD to DVD.	Divide the scene so that the movie to be dubbed is within the recordable duration of one side of DVD.
Found error in image file. Repair disc now? YES NO	Appears if repair has failed after message “Data error in a part of image file. Repair data now?” appeared.	Choose “YES” and designate total repair (automatic repair) of video file. Choosing “NO” will display a message for verifying initialization. [Refer to *3 on page 4-5]
HDD ACCESS	Message displayed during normal operation	Operate the DVD video camera/recorder after the message disappears. If the message does not disappear, see “4-5 Trouble Diagnosis”.
HDD being recognized.	Message displayed during normal operation	Operate the DVD video camera/recorder after the message disappears.
HDD error has occurred.	Appears if a recorded file cannot be read or written normally.	Initialize the HDD (all recorded data will be deleted).
HDD error has occurred. Format the HDD now? YES NO	Appears when initializing the HDD was interrupted previously.	Choose “YES” when initializing (deleting all recorded data), and then execute.
HDD error has occurred. Formating is not complete.	Appears when formatting of HDD was not completed normally, or it was interrupted.	Execute system reset (set the power switch to “OFF”, remove the power supply, use a fine-tipped pen to hold down the RESET button for a few seconds), and then format the HDD again.
HDD error has occurred. Restart.	Appears if a problem occurs in HDD during editing of video file.	Exit the Disc Navigation function, set the power switch to “OFF”, reconnect the AC adapter/charger, and then set the power switch to “HDD”. (The DVD video camera/recorder will automatically repair the video file.)
HDD has no data.	Appears when playback or editing is attempted using the Disc Navigation function with no scene recorded on HDD.	Operate the DVD video camera/recorder after the message disappears.
HDD has no Play List.	Appears if switching of play list is selected with no play list registered.	Operate the DVD video camera/recorder after the message disappears.
HDD includes protected scenes. Delete scenes? YES NO	Appears if the HDD has a program (scene) that was write-protected by a device other than the DZ-HS303A/HS300A. This occurs because the HDD protection function equipped with DZ-HS303A/HS300A protects the entire HDD; it does not handle protection of individual programs (scenes).	Release the protection using the device on which the programs (scenes) were protected, or choose “YES”, and then delete the scenes.

Message	Cause/condition for message to appear	Troubleshooting
HDD is full. Cannot add control info.	Appears if the number of scenes on play list exceeds the upper limit (999) while control information is being added. [Refer to *1 page 4-13]	Delete any unnecessary scenes, or combine several scenes, and then operate the DVD video camera/recorder.
HDD not initialized.	Appears when the HDD has been replaced.	Format the HDD.
	Appears if the power switch is set to "HDD" after an accident, such as power off during formatting of HDD.	Format the HDD.
	Appears if the HDD is faulty.	Replace the HDD, and then format the new HDD.
HDD protected. Release HDD protection.	Appears when a movie recorded on HDD has been edited, deleted, etc. with HDD protection engaged.	Release HDD protection.
It is unrecordable on this card.	Appears when a card other than SD memory card was loaded.	Insert an SD memory card.
NO DVD	Appears if no DVD is loaded.	Load a DVD
	Appears when a disc that cannot be used on the DVD video camera/recorder has been loaded.	Check the type of DVD, and load a DVD that can be used on this DVD video camera/recorder.
	Appears when the DVD was not properly attached to the turntable.	Attach the DVD properly.
	If any of the above does not apply, the DVD video camera/recorder may be faulty.	Refer to "4-5 Trouble Diagnosis".
No more scenes. Play List was deleted.	Appears during user operation; all recorded scenes have been deleted and cleared. The specifications stipulate that a play list with no scene on it cannot be held: If all registered scenes have been deleted, the play list will also be deleted.	Operate the DVD video camera/recorder after the message disappears.
Play Lists over limit.	Appears if an attempt is made to create a new play list or edit play list after the number of registered play lists has reached the upper limit (99) that is defined by the DVD video recording format.	Delete unnecessary scenes before creating a new play list or editing play list.
Same scenes on Play List will be deleted. Delete scenes? YES NO	This message appears during user operation, if even one play list has been created during scene deletion. This message does not appear when a scene is deleted from play list.	Choose "YES" and designate it to delete selected scenes.
Scene NO.xxx is too large. Please divide this scene before dubbing.	Appears if the capacity of the corresponding scene is greater than that of one DVD (approx. 1.4 GB).	Divide the scene so that the capacity is less than that of one DVD (approx. 1.4 GB).
Scenes over limit. Cannot add scene.	Appears if an attempt is made to register a new scene in play list, with the specified 999 upper limit scenes registered. [Refer to *1 page 4-13]	Delete unnecessary scenes from play list before adding a new scene to it.

Message	Cause/condition for message to appear	Troubleshooting
Scenes over limit. Cannot divide scene.	Appears if an attempt is made to divide a scene with the specified 999 upper limit scenes registered, or the number of scenes will exceed 999 with division. [Refer to *1 page 4-13]	Delete unnecessary scenes before dividing a scene.
Stop processing.	This message appears during operation process. It will appear when user interrupted any process by pressing the stop/cancel button when processing multiple scenes, etc.	Operate the DVD video camera/recorder after the message disappears.
There was no scene which can be deleted.	Appears when only multiple locked scenes were selected using the Disc Navigation function, and deleting them was attempted.	Use the Disc Navigation function to unlock the scenes, and then restart operation.
This DVD cannot be used. Please replace DVD.	Appears when a type of DVD that cannot be used on the DVD video camera/recorder was loaded.	Check the type of DVD and insert a disc usable on the DVD video camera/recorder.
This DVD is finalized. Finalize is not required.	Appears when the FINALIZE button was pressed with a finalized DVD-RW (VF-mode)/DVD-R/+RW used.	The disc does not need to be finalized: Wait until the message disappears.
This DVD is recorded by the PAL system. Please replace DVD.	Appears when a disc recorded in the PAL system was loaded: This DVD video camera/recorder is exclusively for the NTSC system and does not comply with the PAL system.	Use a disc recorded in the NTSC system.
The scene from which Video mode/Wide mode differs cannot combine.	Appears if an attempt is made to combine scenes with different movie qualities or with different wide modes on HDD. The specifications state that scenes with different movie qualities or with different wide modes cannot be combined during editing of scenes on HDD.	Dub the scenes on a DVD-RAM or DVD-RW(VR), and then combine them.
The temperature of HDD is outside the operating temperature range. Turn off power.	Appears if the temperature of HDD or ambient temperature is higher than the HDD operating allowable temperature.	Set the power switch to "OFF", and then leave the DVD video camera/recorder in a well-ventilated place until the temperature comes down. (DVD may operate normally at this time.)
	Appears if the temperature of HDD or ambient temperature is lower than the HDD operating allowable temperature.	Set the power switch to "OFF", and then move the DVD video camera/recorder to a warm place, taking care that no condensation occurs. (DVD may operate normally at this time.)
UNFORMAT DVD	Appears when an unformatted or logically damaged DVD was loaded.	Format the DVD (deleting all recorded data), or replace the DVD.
	Also appears when a dirty DVD was loaded.	Refer to "4-3-5 Cleaning DVD and optical pickup" and clean the DVD. Or replace the DVD.

Message	Cause/condition for message to appear	Troubleshooting
UNFORMAT HDD	Appears when the HDD is replaced.	Format the HDD.
	Appears if the power switch is set to "HDD" after an accident occurred, such as power off during formatting of HDD. Format the HDD.	Format the HDD.
	Appears if the HDD is faulty.	Replace the HDD, and then format a new HDD.
Use AC adapter/charger.	Appears if a battery is used when finalizing a DVD-RW/DVD-R/+RW. The specifications state that DVD-RW/DVD-R/+RW can be finalized only when the AC adapter/charger powers the DVD video camera/recorder.	Terminate the Disc Navigation function, set the power switch to "OFF" with the DVD loaded, remove the battery, and then connect the AC adapter/charger. Finalize the DVD again.
Use AC adapter/charger. Turn off power.	Appears if a battery is used when repairing video files. The specifications state that video files can be repaired only when the AC adapter/charger powers the DVD video camera/recorder.	Set the power switch to "OFF" with the DVD loaded, remove the battery, and then connect the AC adapter/charger. [Refer to *3 page 4-13]
Write protected. Check card.	Appears when an SD memory card whose erasure prevention switch was locked is loaded.	Unlock the erasure prevention switch of SD memory card.
Write protected. Check DVD.	Appears if a DVD that was write-protected for disc units by software disc-protect function is loaded, or if an attempt is made to record on write-protected DVD.	Release the software disc-protect.
Write protected. Check HDD.	Appears when a movie recorded on HDD has been edited, deleted, etc. with HDD protection engaged.	Release HDD protection.

**Note:**

The listed messages are subject to change without notice for improvement of performance.

- \*1: The DVD video recording format defines the maximum number of entry points as 999: Since one entry point is allocated to one scene, the maximum number of scenes recordable on DVD/HDD with the DVD video camera/recorder is 999.
- \*2: If recording is continued without editing, one scene will comprise one cell for each entry point.  
When scenes are combined, only the number of entry points will decrease (only the entry point is deleted); the number of cells will not decrease. Assume, for example, that the number of cells before scenes are combined is 999, which is the upper limit defined by the DVD video recording format. If a scene comprising one cell is divided at two points and the scene between the divided scenes needs to be deleted, the cell must be further divided in order to delete. However, since the number of cells has reached the upper limit in this case, the cell cannot be divided and the scene cannot be deleted.
- \*3: Take care with the following when repairing video file:
  - a) If any message appears when the power switch was moved from “OFF” to “Movie” or “Disc Still” with the disc left loaded after camera recording, choose repair.
  - b) If recording and playback are possible with another disc, which is free from condensation or dirt, choose repair.
  - c) The HDD can be repaired when a battery is connected (except when the remaining level indicator blinks), but be sure to connect the AC adapter/charger when repairing DVD. The specifications state that DVD cannot be repaired when the DVD video camera/recorder is powered by a battery.
  - d) Although repair is normally finished in several minutes, it could take approx. one hour.
  - e) If the disc is removed while it is being recognized, the repair function of movie file will be invalid.
  - f) If the timing when power is turned off is inappropriate, normal repair may be impossible.
  - g) If the disc contains data recorded on a device other than DZ-HS303A/HS300A, normal repair may not be possible.
  - h) The repaired data may be different from the original recorded content because of partial deletion of a defective portion.
  - i) The repaired data (only corrected portion in case of partial repair) will lose the original date/time information because the information for date/time when repair was executed will be added.
  - j) If “all repair” is executed, repair will be made in the order of all videos and all photos, and the time-sequential relationship of recorded contents may be lost.

## 4-3 Display of Error Codes and Troubleshooting

### Restriction:

The information included in this section is exclusively for service personnel. Do not disclose it to persons other than service engineers.

The DVD video camera/recorder is equipped with a self-diagnostic function. If the DVD video camera/recorder detects any problem, it will choose an appropriate error code (4-digit alphanumeric) and store it in flash memory. Display the error code to perform troubleshooting, according to the content.

### 4-3-1 Displaying error codes and clearing them

#### (1) Display method

- 1) Use the battery or AC adapter/charger to power the DVD video camera/recorder.
- 2) Set the power switch to "HDD". If a DVD is loaded, this function can also be executed with the power placed in the "DVD" position. Then operate the DVD video camera/recorder while watching the LCD monitor or viewfinder.
- 3) Press the DISC NAVIGATION button to display the thumbnail screen.
- 4) Display the error code screen using the following button operation:  
Simultaneously press the SLEEP/RESTART, REC and ►► buttons.

#### (2) Display clearing method

- 1) Press the STOP/CANCEL button to restore the thumbnail screen. To restore the normal screen, press the STOP/CANCEL button again or press the DISC NAVIGATION button.

### 4-3-2 Details of error code display

Up to four error codes of problems can be displayed with the dates/times when the problems occurred.

If the same problem occurs repeatedly, it will be judged as one problem, and the same error code will not continue to appear.

If more than four problems occur, the error codes will be erased beginning with the oldest problem, and the code for the newest problem will be recorded.

If no error code is recorded, the line for error code and problem occurrence date/time will be all zero (0).

**Information:**

To erase all error codes and reset to the default status, perform system reset (remove the battery and AC adapter/charger, and use a fine-tipped pen to hold down the reset button for several seconds).

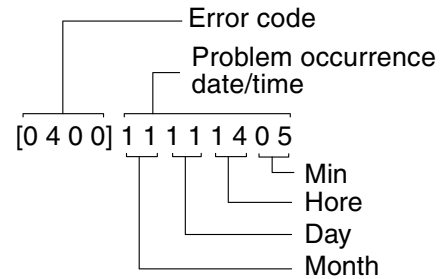
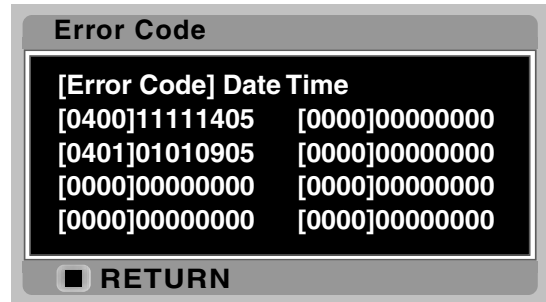


Fig. 4-3-1 Example of Error Code Display

### 4-3-3 Major error codes and troubleshooting

Table 4-3-1 shows the error codes that are likely to frequently appear, and appropriate troubleshooting.

If error codes other than those listed in Table 4-3-1 appear, check with the factory for troubleshooting.

Table 4-3-1 Major Error Codes and Troubleshooting

Error code	Contents of problem	Troubleshooting
0200	Optical pickup failed to move.	Refer to “4-3-4 DVD load check flowchart”
0280		
0400	Recognition of DVD failed.	
0401	Optical pickup was faulty.	Replace the DVD drive unit.
040D	No DVD	Load a DVD.
1001	DVD-RW/+RW was not formatted. <sup>(*)</sup>	Format the DVD-RW/+RW
1100	Reading data from DVD failed.	Refer to “4-3-4 DVD load check flowchart”
2881	Recognition of disc failed.	Refer to “4-3-4 DVD load check flowchart”
3105	Recording photos failed because of condensation in DVD drive unit (optical pickup) or dirt on optical pickup.	Set the power switch to “OFF”, and then leave the DVD video camera/recorder in a dry place until condensation disappears (for at least 1-2 hours).
		Clean the optical pickup, referring to “4-3-5 Cleaning DVD and optical pickup”.
3122	Recording on DVD failed because it was subject to vibrations or impact when it was being accessed.	Any vibration or impact to DVD while it is being accessed will result in no recording.

Error code	Contents of problem	Troubleshooting
5122	Video or photo file cannot be opened.	Clean the DVD and optical pickup, referring to "4-3-5 Cleaning DVD and optical pickup".
		Replace the DVD.
		Replace the DVD drive unit.
7601	Optical pickup was faulty.	Replace the DVD drive unit.
77xx <sup>(*)2</sup>	Formatting DVD failed.	Clean the DVD and optical pickup, referring to "4-3-5 Cleaning DVD and optical pickup".
		Replace the DVD.
		Replace the DVD drive unit.
7902	DVD insertion block does not open.	Make sure your hand is not blocking the DVD insertion block.
		Remove the DVD, referring to "4-6 Procedure for Removing DVD from Faulty DVD Video Camera/Recorder", and then refer to "4-5 Trouble Diagnosis".
A080	Reading signal from disc failed due to condensation or dirt on DVD.	With the DVD loaded, set the power switch to "OFF", and then leave the DVD video camera/recorder in a dry place until condensation disappears (for at least 1-2 hours).
		Clean the optical pickup, referring to "4-3-5 Cleaning DVD and optical pickup".
EC87	Emergency stop occurred while data was being read or written from/to DVD.	Refer to "4-3-4 DVD load check flowchart"
F100	Buffer overflowed during recording due to foreign object in the vicinity of optical pickup, or optical pickup was faulty.	Remove the foreign object, taking care that the optical pickup is not damaged.
		Replace the DVD drive unit.
F571	Recording photos failed.	Replace the DVD drive unit.
F572	Recording videos failed due to magnetic substance in the vicinity of optical pickup.	Remove the magnetic substance, taking care that the optical pickup is not damaged.
F573		
F700	DVD drive unit (DRG circuit board) was faulty.	Replace the DVD drive unit.
FB00	Optical pickup was faulty.	
FE80	Process of writing data to DVD failed.	Refer to "4-3-4 DVD load check flowchart"

\*1: "Formatting DVD-RW/+RW on the DVD video camera/recorder" is exclusively for camera recording:

It is necessary to write images recorded on the DVD video camera/recorder in real time (in order to enhance the responsiveness of DVD-RW/+RW).

With DVD-RW, the recording mode (VR or VF mode) must be set during initialization.

\*2: This means an error in 7700s: Numerals will appear in digits xx for actual error codes.

### 4-3-4 DVD Load Check Flowchart

Check the following only when an instruction for referring to this chart is given in “Table 4-3-1 Major Error Codes and Troubleshooting” on the previous item.

#### Caution

Laser light striking the eye may cause your eyesight to be lost: For safety, be sure to remove any power supply (AC adapter/charger, battery, etc.) from the DVD video camera/recorder before starting work.

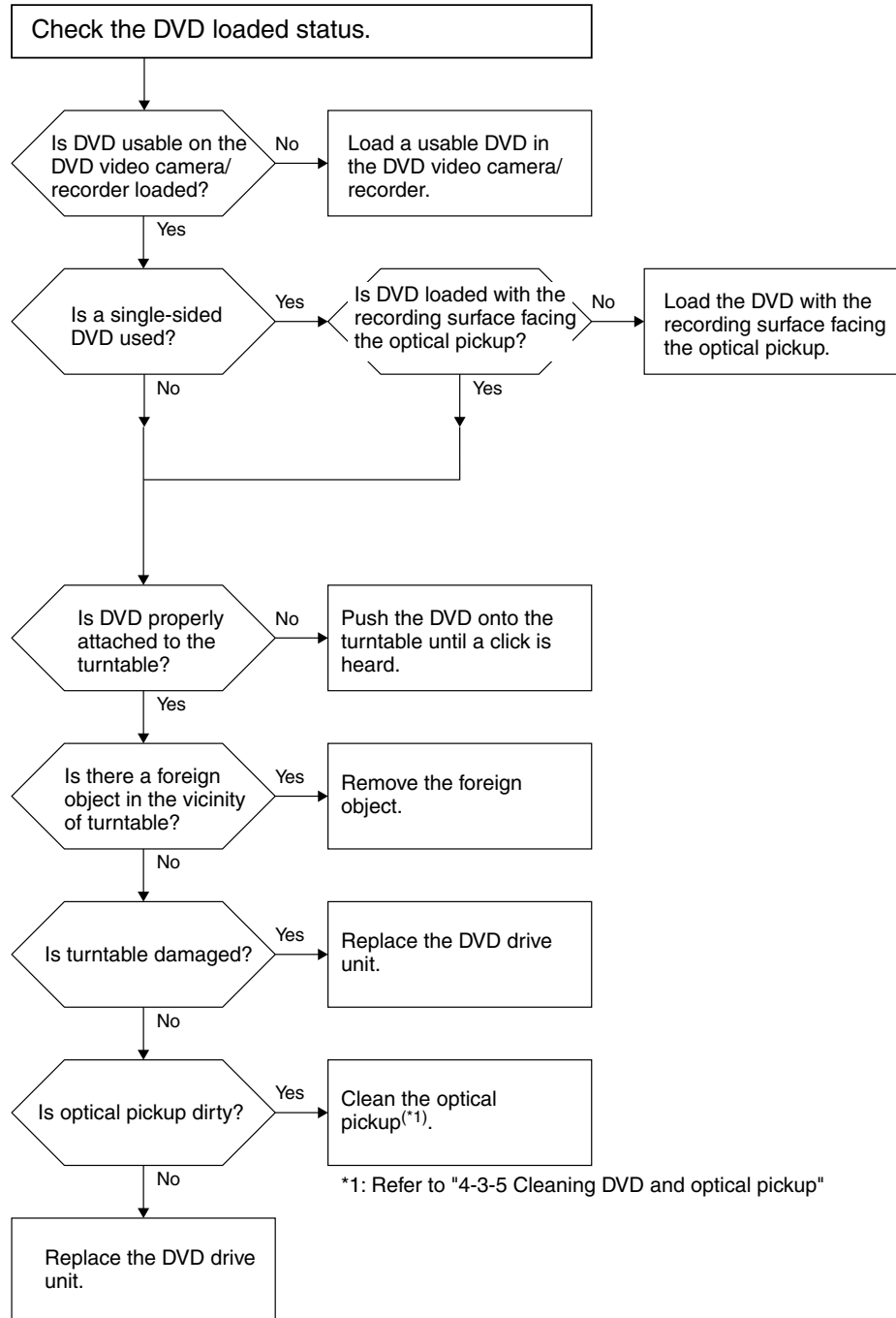


Fig. 4-3-2 DVD Load Check Flowchart

## 4-3-5 Cleaning DVD and optical pickup

### (1) Cleaning DVD

- 1) Use the provided disc cleaning cloth, or a soft, dry cloth to lightly clean the DVD from the inner to outer edges in axial direction.
- 2) If the dirt cannot be removed with the above procedure, put a few droplets of absolute alcohol in a soft, dry cloth, and use it to lightly clean the DVD from the inner to outer edges in axial direction.

Disc cleaning cloth provided or soft and dry cloth

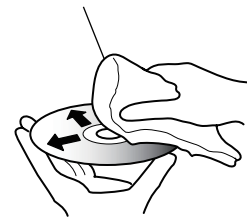


Fig. 4-3-3 Cleaning DVD

#### Information:

The following disc cleaners and cleaning cloths (generally available) are also usable:

- a) KS2424-X00 Toraysee (cleaning cloth only) produced by Toray
- b) LF-K200DCJ1 DVD-RAM/PD disc cleaner (cleaning cloth and cleaning liquid) produced by Panasonic
- c) OC-CS MO disc cleaner (cleaning cloth and cleaning liquid) produced by Hitachi Maxell

### (2) Cleaning optical pickup

#### Note:

Do not clean the optical pickup needlessly. The optical pickup is a precision component. Repeated cleaning could cause a fault.

- 1) Attach the AC adapter/charger or battery (power supply), and then press the DISC EJECT button to open the disc insertion block.
- 2) Remove the AC adapter/charger or battery (power supply).

### Caution

Laser light striking the eye may cause your eyesight to be lost: For safety, be sure to remove any power supply (AC adapter/charger, battery, etc.) from the DVD video camera/recorder before starting work.

3) Check to see whether the optical pickup is dirty: If it is not dirty, cleaning is not necessary.

If the optical pickup is dirty, use the following procedure to clean it:

- a) Drip one droplet of absolute alcohol on a cotton swab<sup>(\*)</sup>.  
Lens cleaner liquid for CD/DVD (generally available) is also usable in place of absolute alcohol.
- b) Use the cotton swab to clean the optical pickup in the direction of the arrow using just enough force that it lightly goes down: Using undue force or incorrect cleaning direction could cause a fault.

\*1: Use a cotton swab free from any additive or chemical: Those made by Jhonson&Jhonson are recommended. Never reuse a used cotton swab.

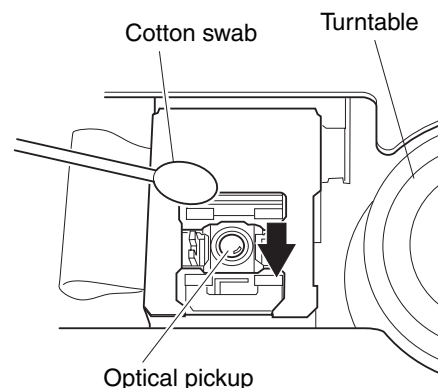


Fig. 4-3-4 Cleaning Optical Pickup

## 4-4 Checking Versions of Firmware and Updating

The DVD video camera/recorder stores in flash memory the five types of firmware program shown in Table 4-4-1. These firmware programs can be updated whenever necessary to improve performance. Check to see whether any defects in the DVD video camera/recorder can be eliminated by updating any firmware programs: If improvement is likely, update them.

### Information:

The information on how to upgrade the firmware, obtain firmware data and create a disc or card containing upgraded firmware will be reported on service bulletin, etc.

Table 4-4-1 List of DVD video camera/recorder Firmware Programs

Type of firmware	Description
System firmware	Controls the operation of entire system, including recording, playback, Disc Navigation, connections with external devices, clock, battery, input/output etc..
Camera microprocessor firmware	Controls the operation of camera block (including optical system).
Drive main firmware	These programs control the DVD drive system (mechanism block)
Drive core firmware	
Loader firmware	Performs settings when the DVD video camera/recorder starts

## 4-4-1 Checking firmware versions

### (1) Version check screen display method

- 1) Attach the battery pack or AC adapter/charger to power the DVD video camera/recorder.
- 2) Set the power switch to the “DVD” position. Then operate the DVD video camera/recorder while watching the LCD monitor or viewfinder screen.
- 3) If a DVD is loaded, press the DISC NAVIGATION button to display the thumbnail screen. If no DVD is loaded, this will not be necessary.
- 4) Display the version check screen (version display screen) using the following button operation:  
Simultaneously press the SLEEP/RESTART, REC and **⏮** buttons.

### (2) Version check screen display clearing method

- 1) If no DVD is loaded, press the STOP/CANCEL button to restore the normal screen.  
If a DVD is loaded, press the STOP/CANCEL button to restore the thumbnail screen. To restore the normal screen, also press the STOP/CANCEL button or DISC NAVIGATION button.

### (3) Details of information version screens

Table 4-4-2 Detail/Version Screens

Item	Display content
Model	Model name
System	System firmware version number
Camera	Version number of camera microprocessor firmware, and number of pixels of CCD image sensor in parentheses ( )
Drive (Main)	Drive main firmware version number
Drive (Core)	Drive core firmware version number

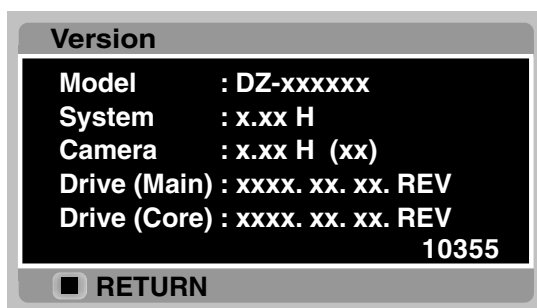


Fig. 4-4-1 Example of Version Screens

**Information:**

- 1) There are three types of firmware for DZ-HS303A/HS300A, depending on the number of pixels of CCD image sensor.

The indication in parentheses ( ) on screen is different for each model (number of pixels of CCD image sensor):

DZ-HS303A (3,310,000 pixels): Camera: x.xx H (3M)

DZ-HS300A (680,000 pixels): Camera: x.xx H (680K/1M)

- 2) The version number of loader firmware cannot be confirmed on the information version screen because of design limitations.
- 3) With actual screens, figures and letters will appear in digits displayed as x on illustrations.
- 4) If a DVD is loaded, a number of up to 5 digits that shows the accumulated operation time of DVD drive unit will appear at the bottom right of screen. Use this as a reference for the time the customer has used the DVD video camera/recorder (the accumulated operation time will not appear when a DVD is not loaded):

Example: 10355 → 103 hours 55 minutes

However, if the DVD drive unit has been replaced, the displayed time will be the operation time of the new DVD drive unit.

## 4-4-2 Updating firmware

If you receive information from the factory on technical bulletin, etc. that updating firmware is needed, you should update to improve the performance, functions and operability of DVD video camera/recorder.

**Caution**

There are three types of camera microprocessor firmware for DZ-HS303A/HS300A, depending on the number of pixels of CCD image sensor. Be sure to acquire the appropriate data before updating the corresponding model, and then create a disc/card for updating.

If a disc/card for updating a model other than that to be serviced is inserted, an mismatch screen (Fig. 4-4-2) will appear: Stop updating and remove the disc/card.

- 1) Acquire the data for updating of firmware and create a disc or card for updating: Information on how to do this will be reported on service bulletin, etc.
- 2) Set the power switch to “OFF”, and then use the AC adapter/charger to power the DVD video camera/recorder: A battery cannot be used to do this because it may interrupt power of DVD video camera/recorder during updating.
- 3) Insert the disc/card for updating.
- 4) Set the power switch to “DVD” when using a disc for updating, or to “SD” when using a card for updating.
- 5) After approx. 20 seconds, the updating start screen (Fig. 4-4-2) will appear, and the firmware programs will be automatically updated thereafter. During updating, screens showing that designated firmware program is being updated will appear, followed by screen showing that updating is complete.

Not all firmware programs need updating every time: If the version of the data on disc/card for updating is identical to that of firmware stored in DVD video camera/recorder, the same version

screen will appear.

- 6) When all required updating is complete, the screen for verifying the version of updated firmware will appear, and the updated firmware will be displayed in red.

Make sure that the firmware has been updated to agree with the details specified by the technical bulletin, etc.

- 7) To complete updating, set the power switch to “OFF”, and then remove the disc/card for updating.

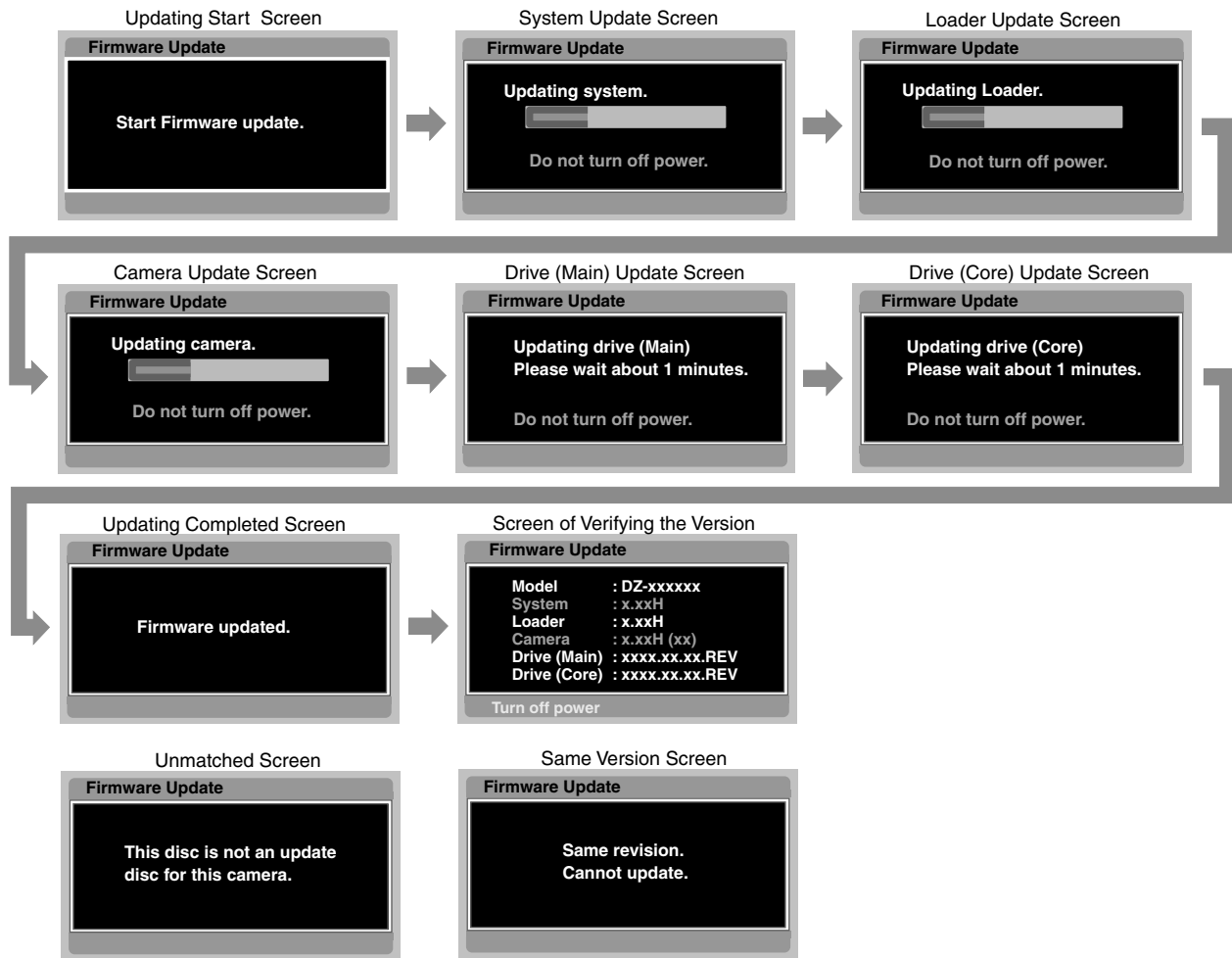


Fig. 4-4-2 Example of Display on Updating Firmware

## 4-5 Trouble Diagnosis

### Information:

- 1) Use the AC adapter/charger to power the DVD video camera/recorder for trouble diagnosis.
- 2) The trouble diagnosis flowchart was prepared presupposing that the circuit boards have been normally attached and connected. Therefore, make sure beforehand that the circuit boards are correctly connected, that connectors and cables are not damaged, and that the status of their connections is correct.

### Cautions

- 1) The DZ-HS303A incorporates a high-voltage flash unit. Use countermeasures to prevent electric shock, such as wearing gloves, and take great care during work. The flash unit keeps its high voltage even if the power supply (AC adapter/charger, battery, etc.) is removed.
- 2) Never look into the objective lens of optical pickup block in disc drive unit, and take great care that the reflected laser beam does not strike your eye: Doing so could cause serious vision damage.

The following shows troubleshooting for the symptoms shown below:

#### Power supply system

- Power does not turn on.

#### HDD system

- HDD does not operate.
- Message "HDD ACCESS" does not disappear.

#### Disc system

- Recognition of DVD does not start even if a normal DVD is loaded.
- Message "NO DVD" appears even if a normal DVD is loaded.
- Message "DVD ACCESS" does not disappear even if a normal DVD is loaded.
- Message "Write protected. Check DVD" appears even if a DVD with no write-protect is loaded.
- Message "DVD is not formatted. Format the DVD now?" appears even if a formatted DVD is loaded.

#### Video signal system

- No image appears on LCD monitor.
- No image appears in viewfinder.
- No video signal from AV input/output jack.
- Camera recorded image is abnormal.
- Block noise occurs during recording of video.

#### Audio signal system

- No audio from AV input/output jack.
- No sound from speaker during playback of video.
- No audio can be recorded from microphone.

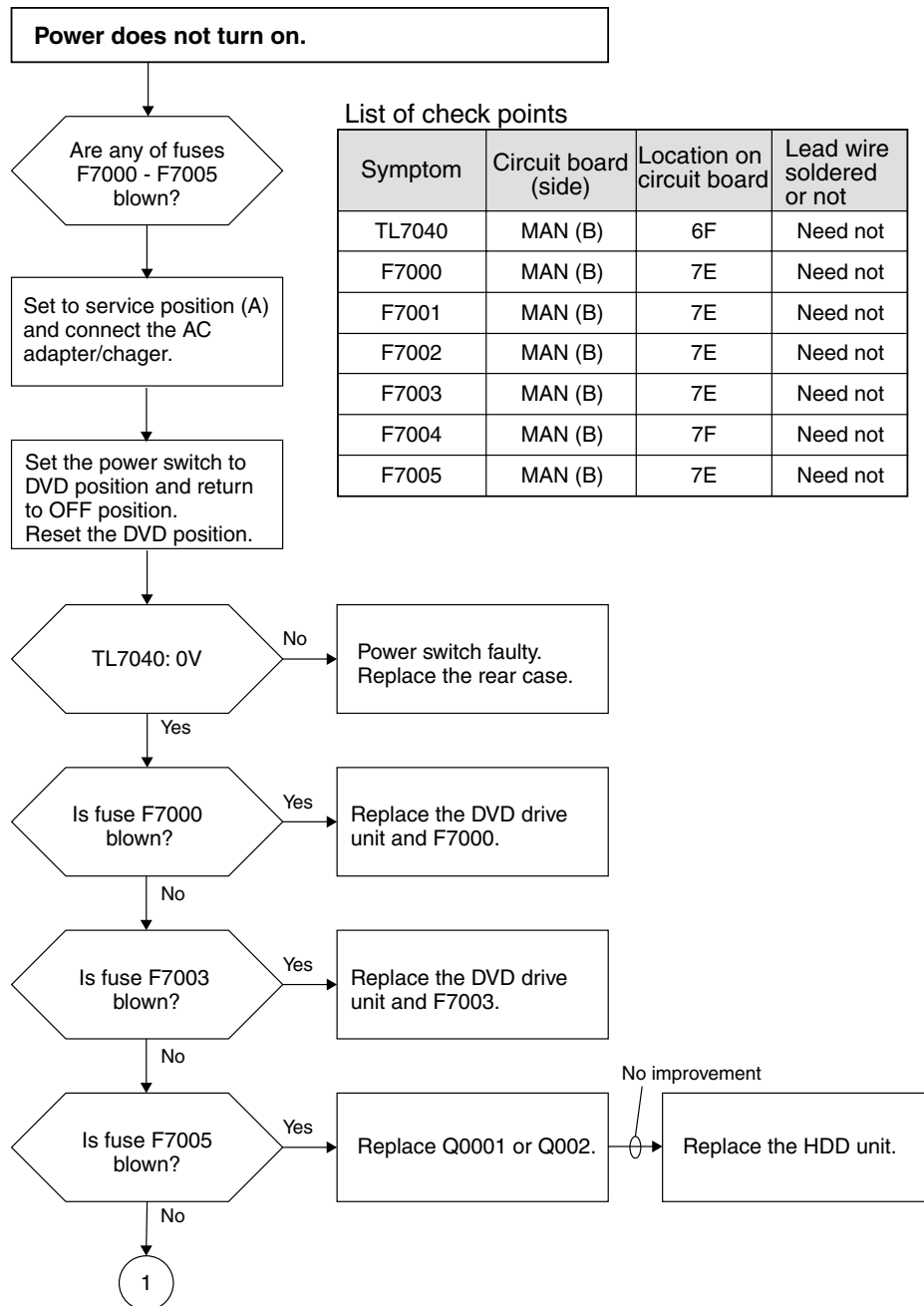
#### Operation system/Miscellaneous

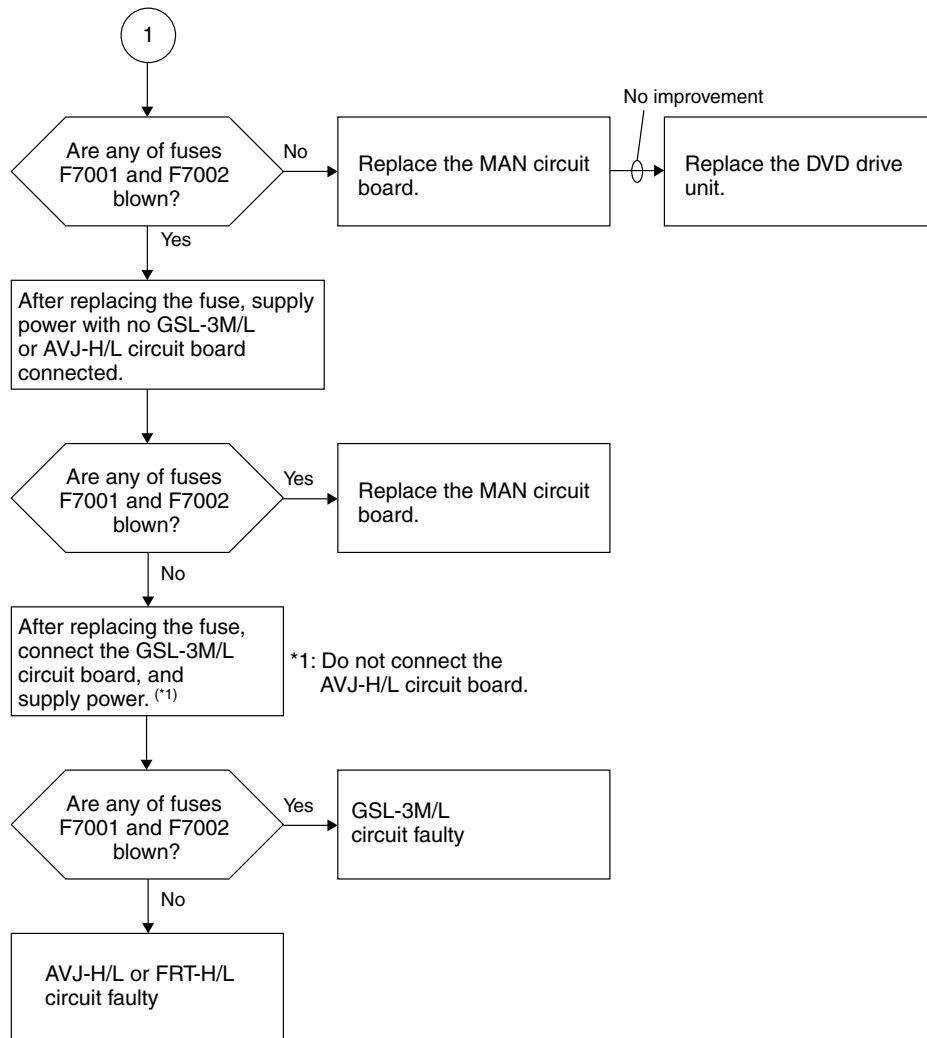
- DISC EJECT button does not operate.
- PHOTO/SELECT button (focus lock) does not function.
- Operation buttons on L case do not function.
- REC button does not operate.
- Zoom lever does not operate.
- Autofocus does not operate.
- Date or time is not set.

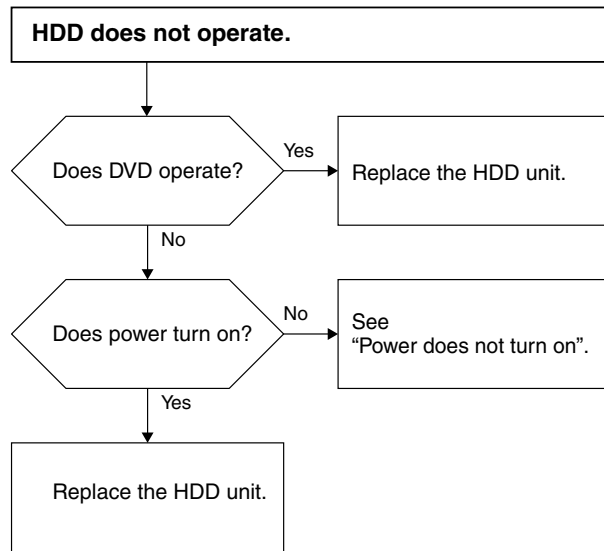
## 4-5-1 Trouble diagnosis flowchart

### Interpreting the trouble diagnosis flowchart:

- 1) If removing any component is stated in the flowchart, remove that component, referring to “5. Disassembly and Reassembly”.
- 2) If “Solder a lead wire to check point” is stated, solder a lead wire of approx. 10 cm according to the list of check point. Be sure to remove the lead wire after trouble diagnosis is finished.
- 3) If “Set to service position (A) or (B)” is given in the flowchart, set the DVD video camera/recorder to the appropriate service position, referring to “4-5-2 Reassembly to enable service position”.

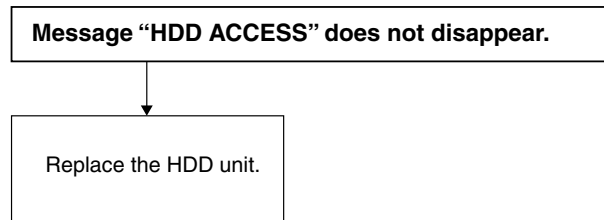




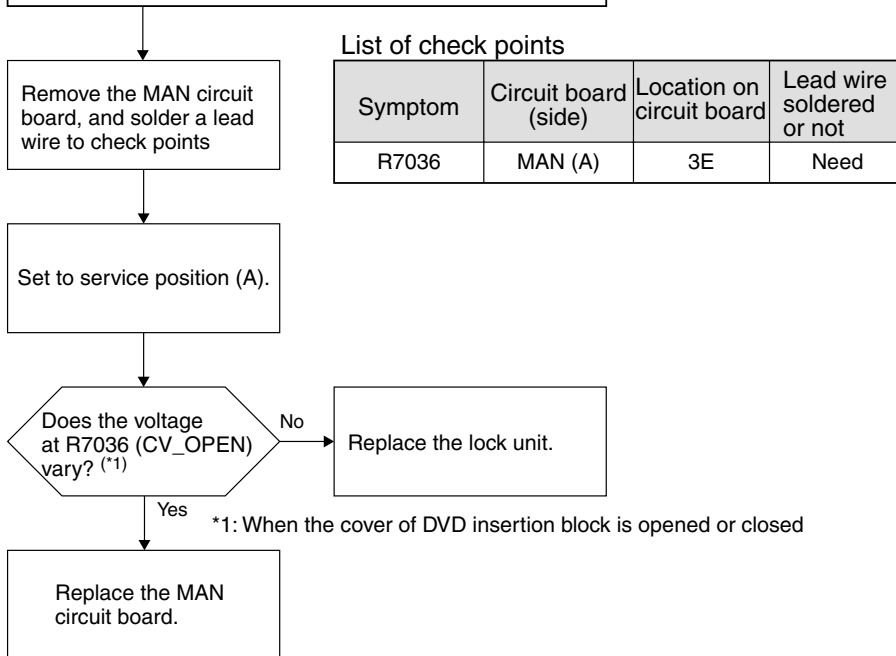


**Information:**

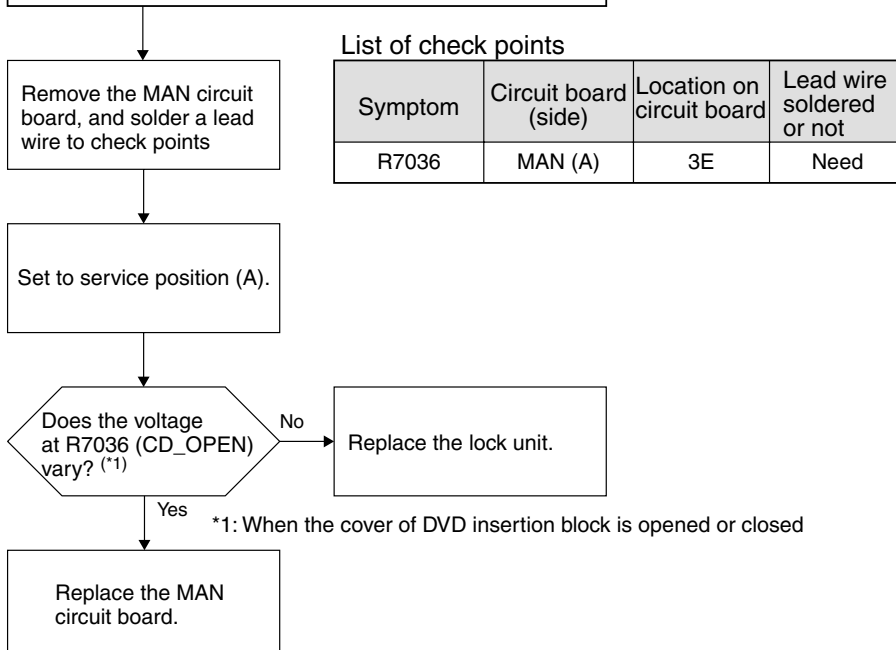
With the DZ-HS303A/HS300A, the HDD unit is set to master, and the DVD drive unit is set to slave. Therefore, if the HDD unit is electrically faulty, the DZ-HS303A/HS300A may not recognize the DVD drive unit and the DVD drive unit may not operate.

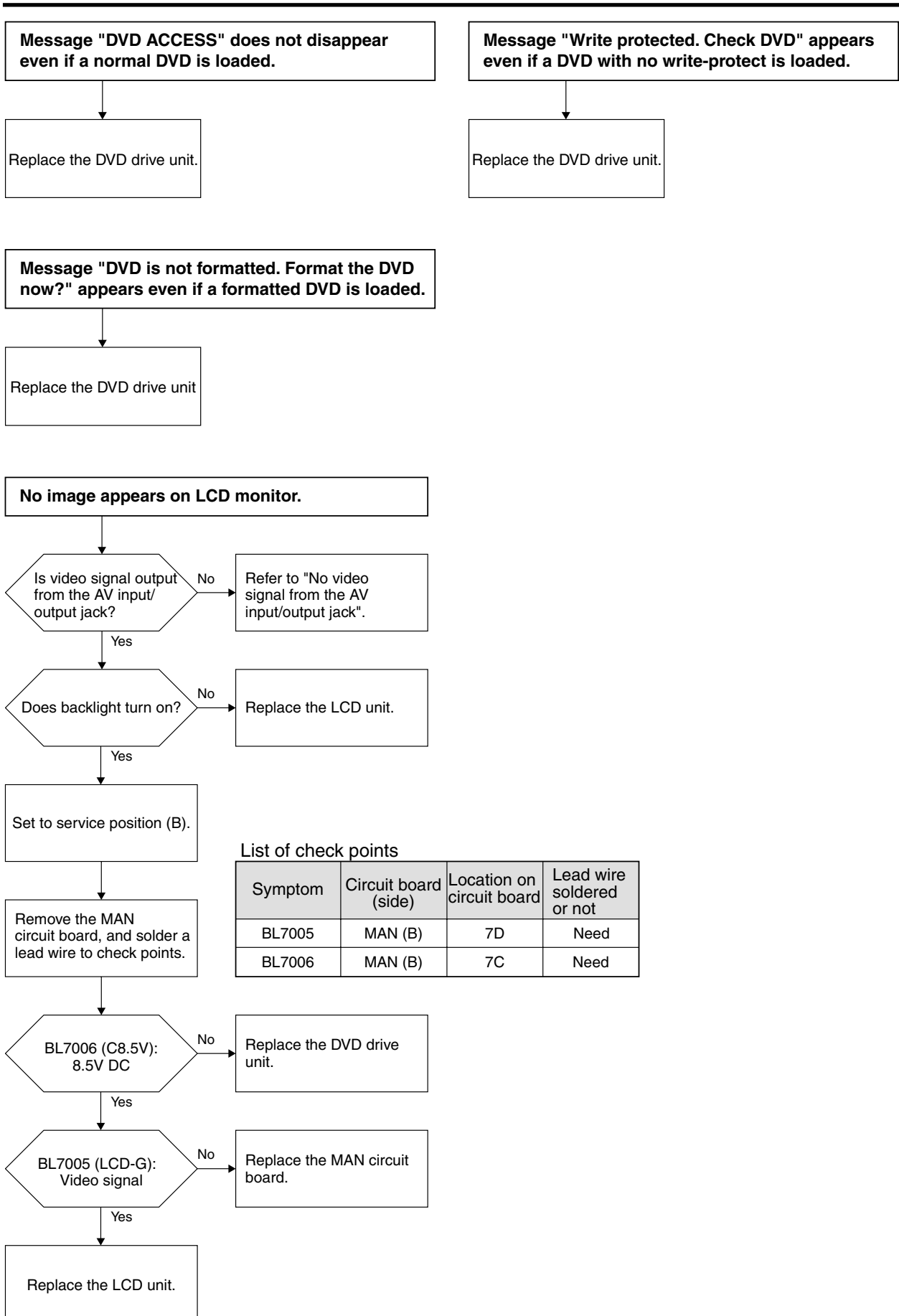


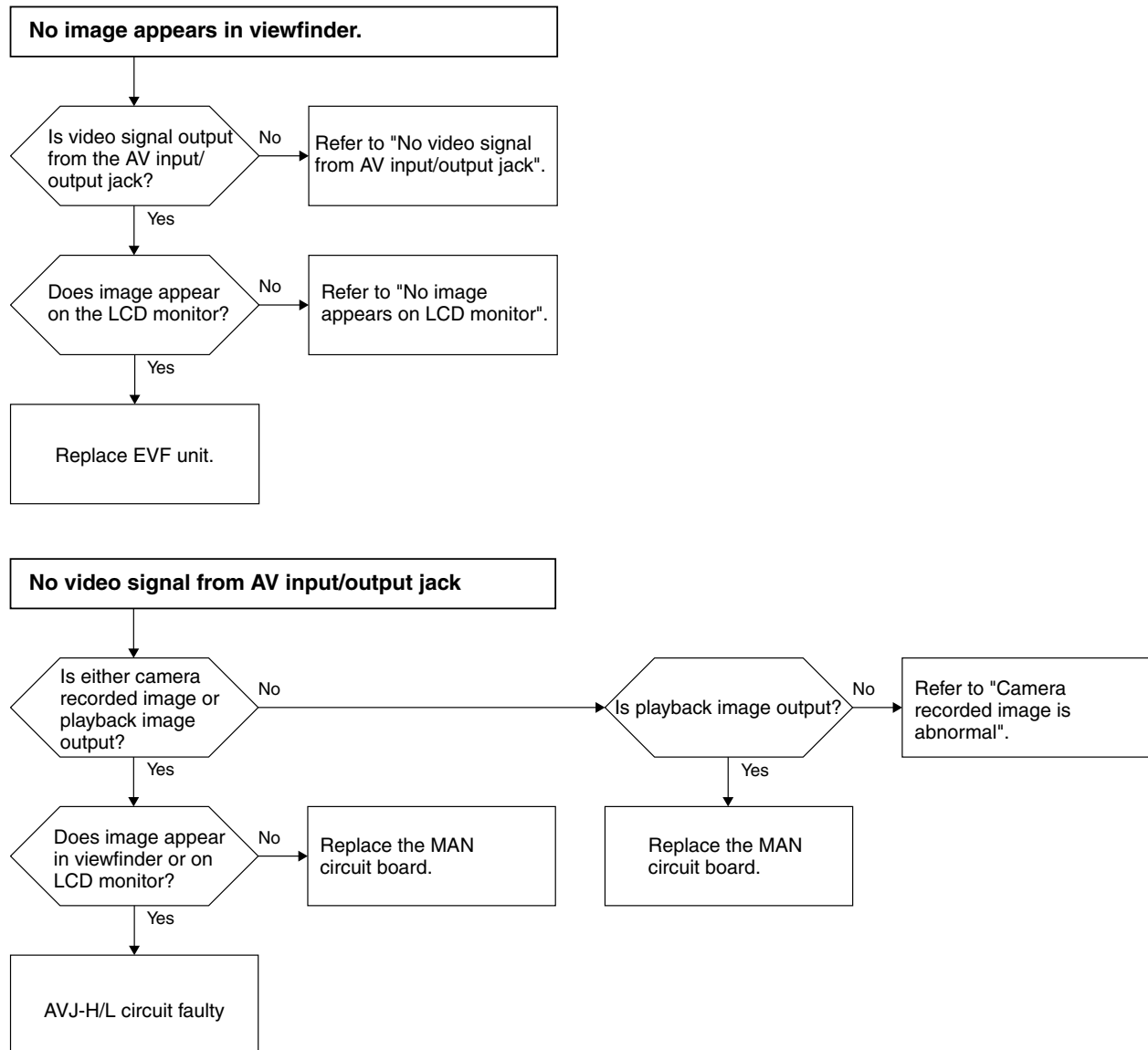
**Recognition of DVD does not start even if a normal DVD is loaded.**

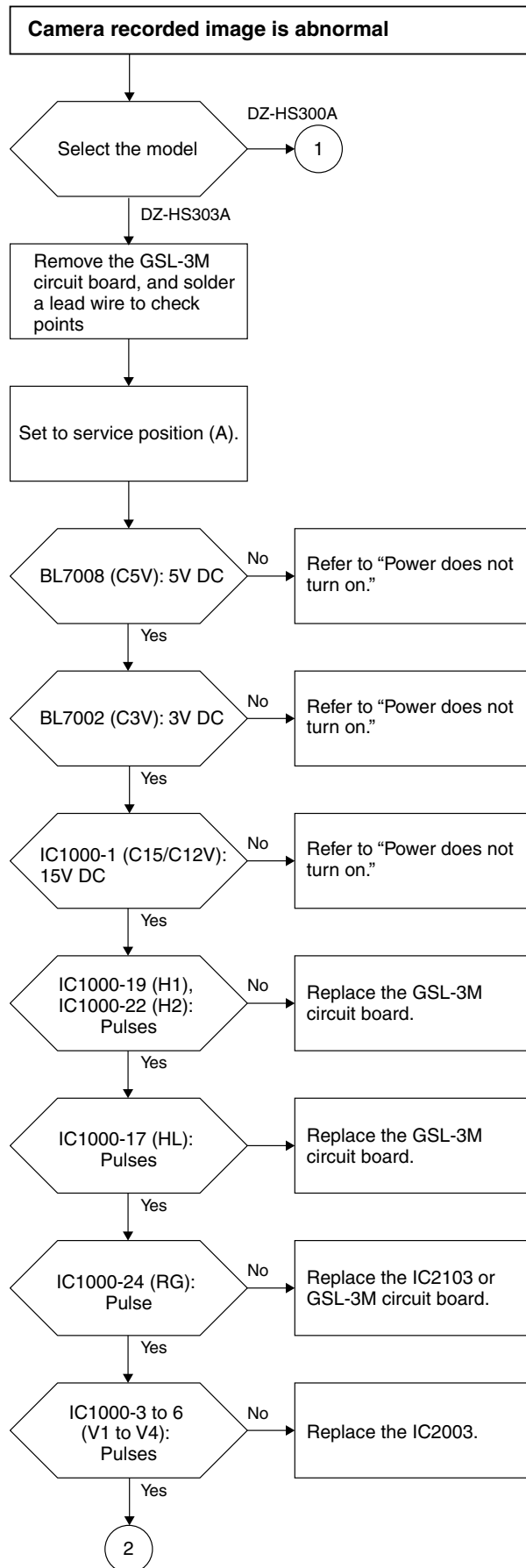


**Message "NO DVD" appears even if a normal DVD is loaded.**



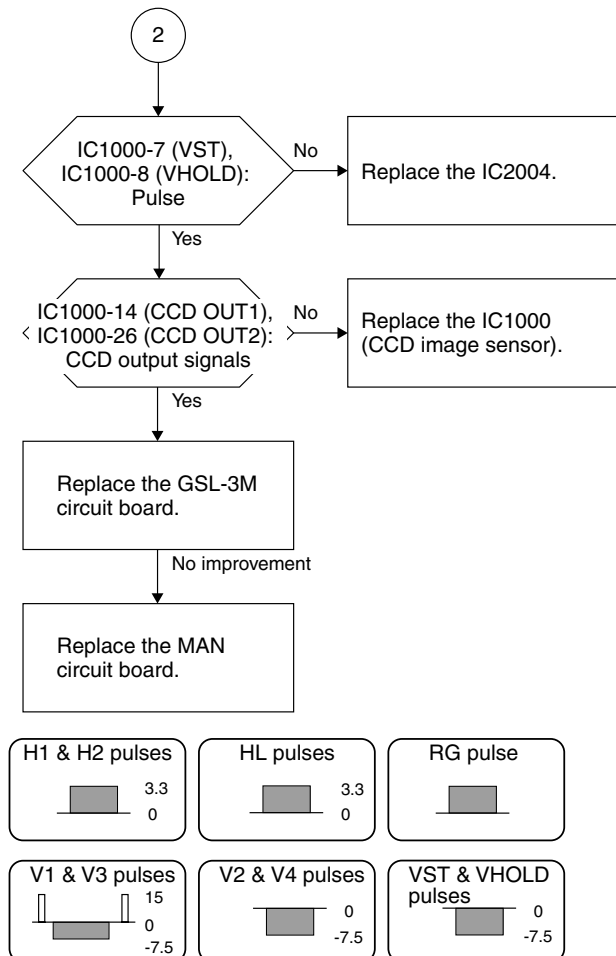


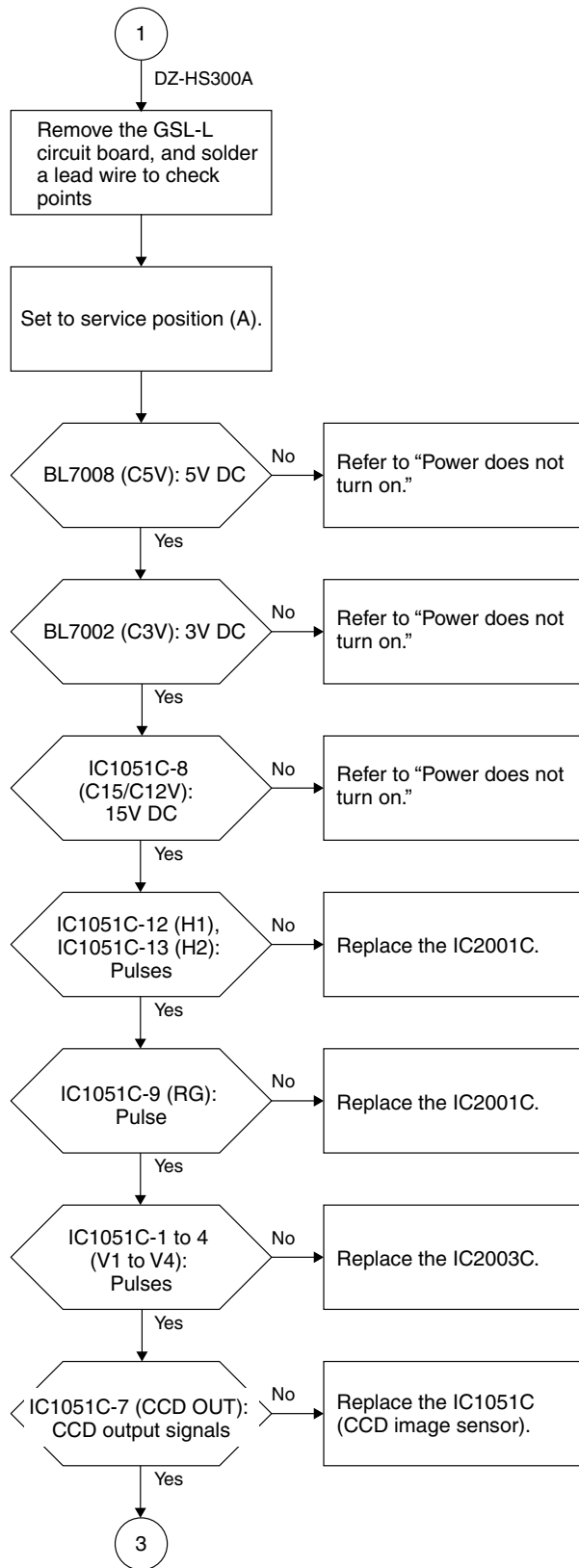




List of check points

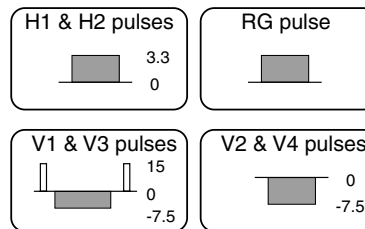
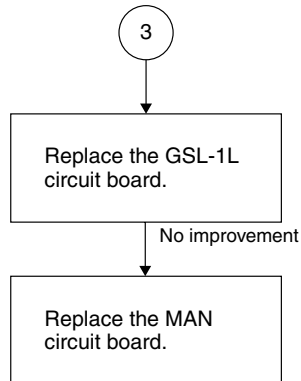
Symptom	Circuit board (side)	Location on circuit board	Lead wire soldered or not
BL7002	MAN (B)	7C	Need
BL7008	MAN (B)	7C	Need
IC1000-1	GSL-3M (B)	2D	Need
IC1000-3	GSL-3M (B)	2D	Need
IC1000-4	GSL-3M (B)	2D	Need
IC1000-5	GSL-3M (B)	2D	Need
IC1000-6	GSL-3M (B)	2D	Need
IC1000-7	GSL-3M (B)	1D	Need
IC1000-8	GSL-3M (B)	1D	Need
IC1000-14	GSL-3M (B)	1D	Need
IC1000-17	GSL-3M (B)	1D	Need
IC1000-19	GSL-3M (B)	1D	Need
IC1000-22	GSL-3M (B)	2D	Need
IC1000-24	GSL-3M (B)	2D	Need
IC1000-26	GSL-3M (B)	2D	Need

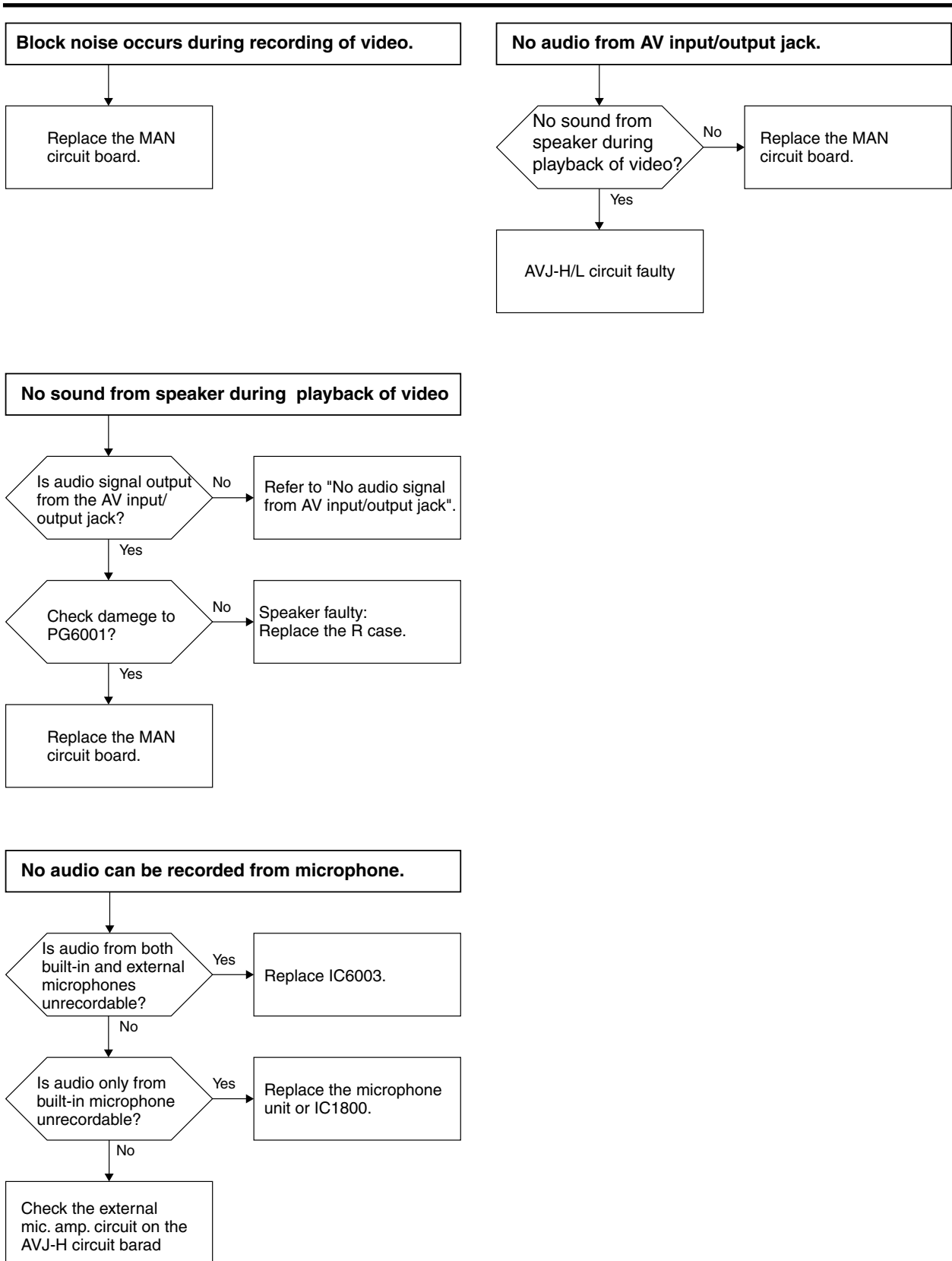


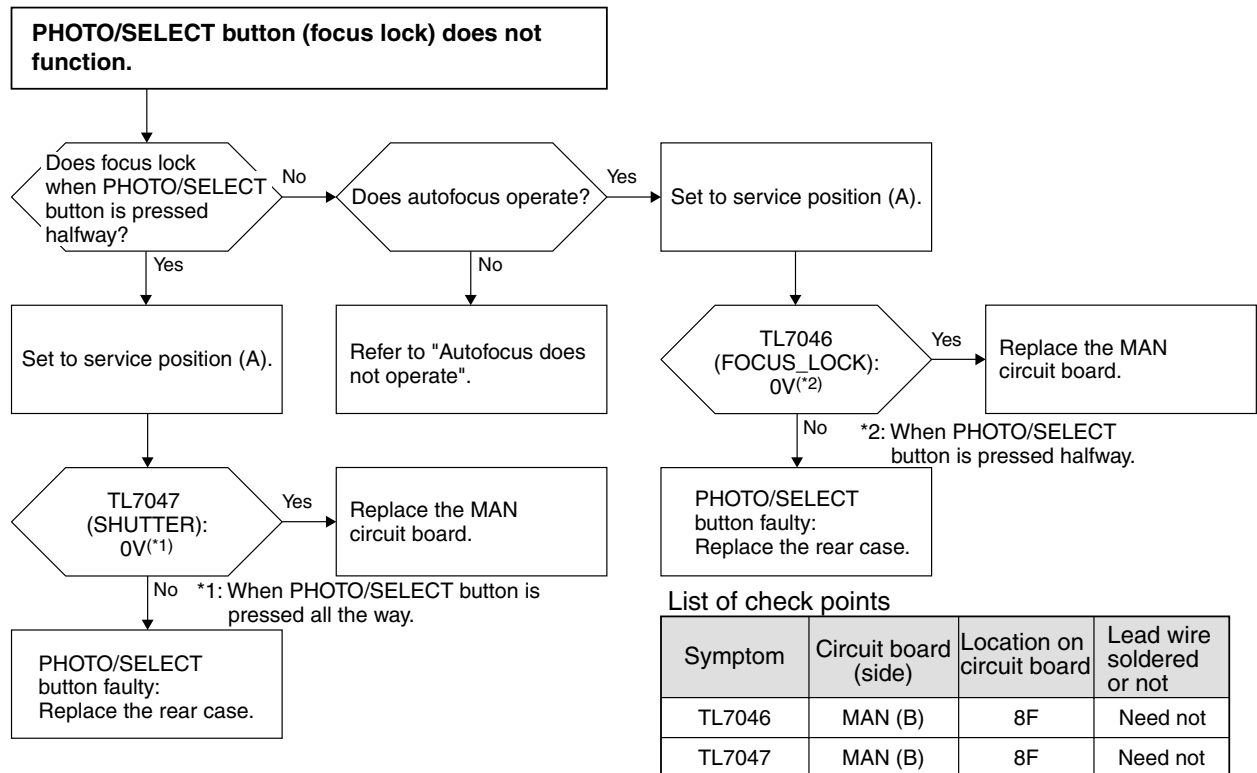
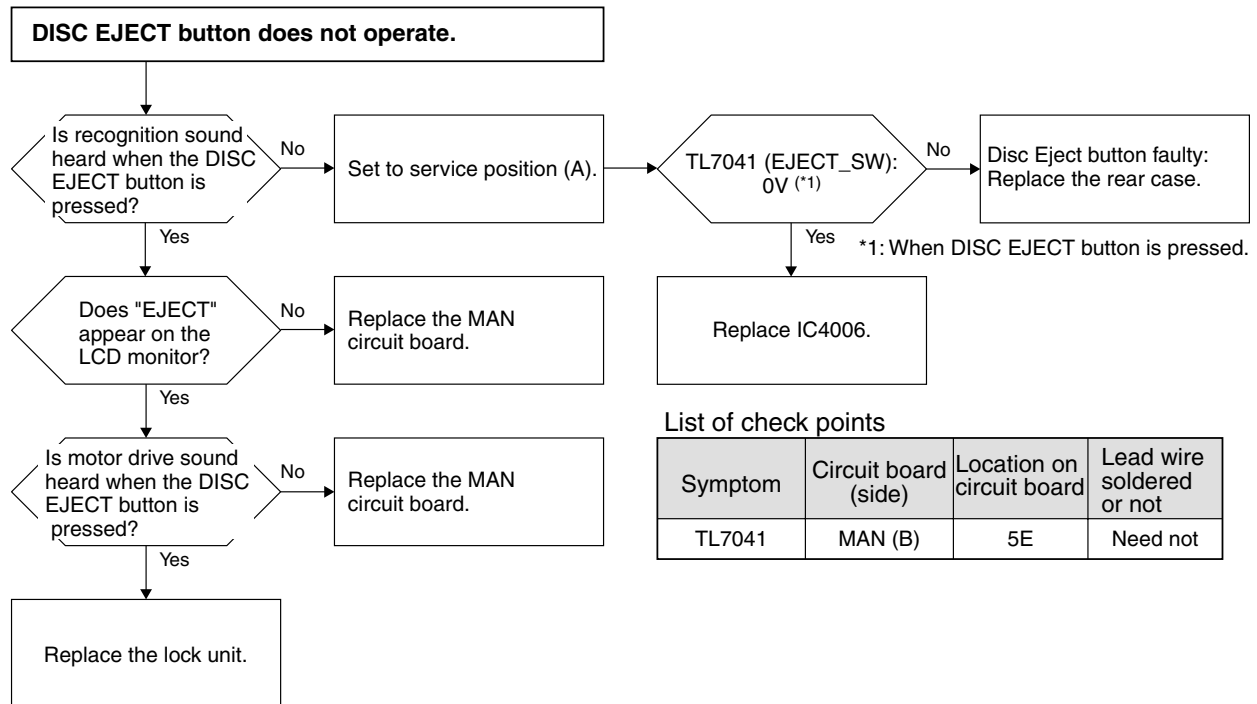


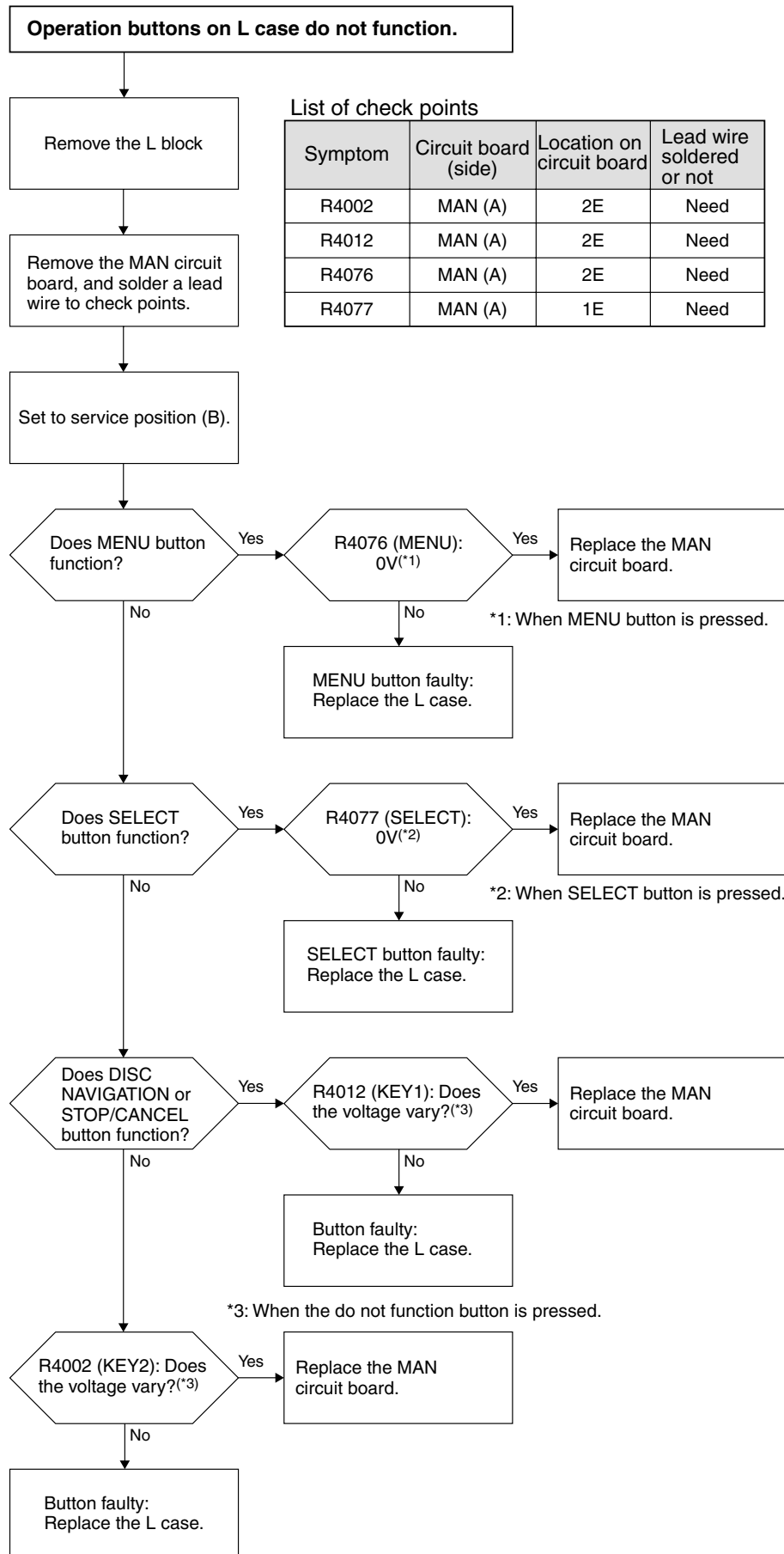
List of check points

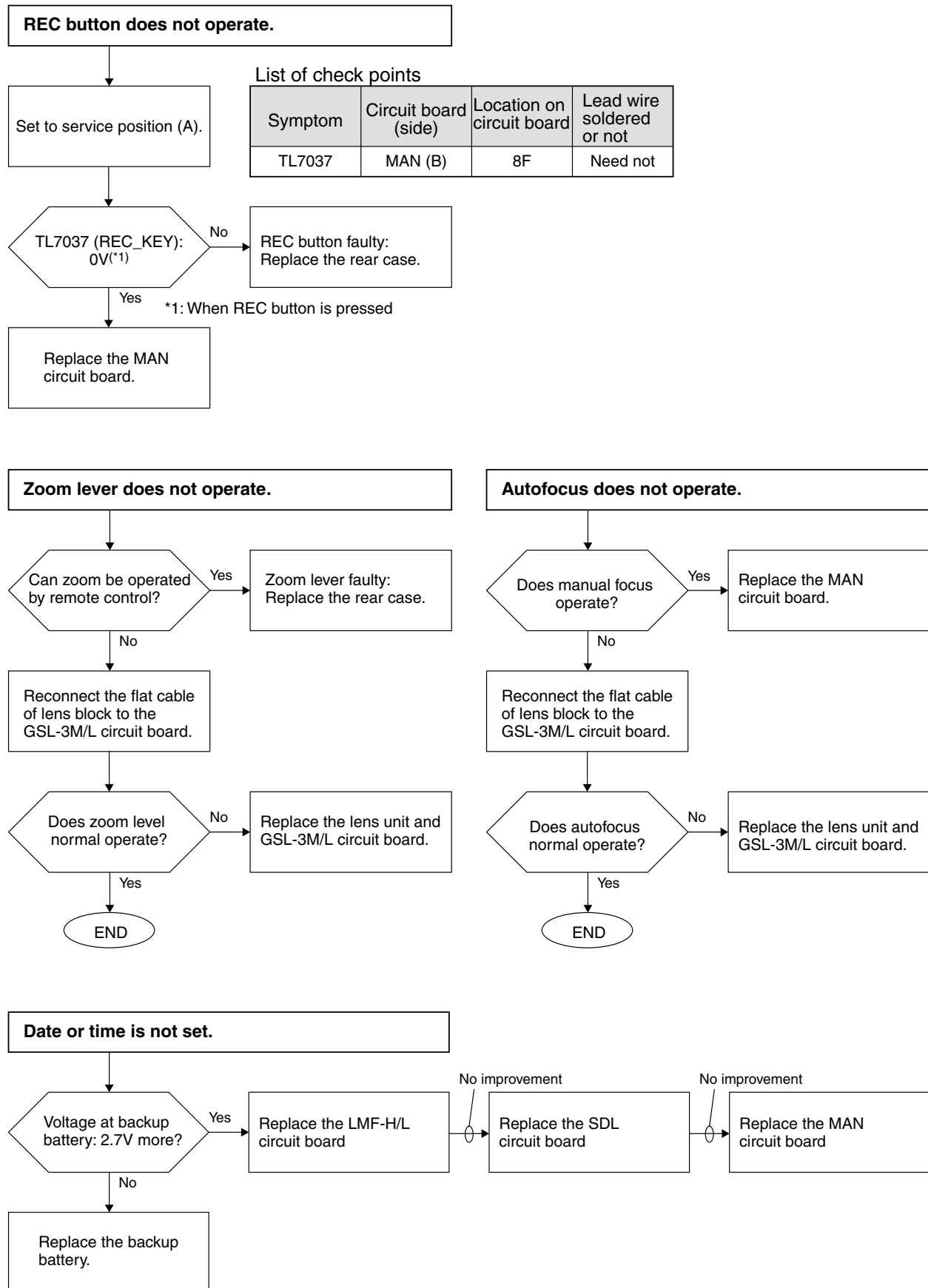
Symptom	Circuit board (side)	Location on circuit board	Lead wire soldered or not
BL7002	MAN (B)	7C	Need
BL7008	MAN (B)	7C	Need
IC1051C-1	GSL-L (A)	1D	Need
IC1051C-2	GSL-L (A)	1D	Need
IC1051C-3	GSL-L (A)	1D	Need
IC1051C-4	GSL-L (A)	1D	Need
IC1051C-7	GSL-L (A)	2D	Need
IC1051C-8	GSL-L (A)	2C	Need
IC1051C-9	GSL-L (A)	2C	Need
IC1051C-12	GSL-L (A)	1C	Need
IC1051C-13	GSL-L (A)	1C	Need











## 4-5-2 Reassembly to enable service position

### Cautions

- 1) The DZ-HS303A incorporates a high-voltage flash unit. Use countermeasures to prevent electric shock, such as wearing gloves, and take great care during work. The flash unit keeps its high voltage even if the power supply (AC adapter/charger, battery, etc.) is removed.
- 2) Laser light striking the eye may cause your eyesight to be lost: For safety, be sure to remove any power supply (AC adapter/charger, battery, etc.) from the DVD video camera/recorder before starting work.

### Information:

Numbers in the procedural diagram are step numbers of procedure; letters in brackets [ ] show the types of screw.

### (1) Setting to service position (A)

Service position (A) is used to troubleshoot the power supply system, video/audio signal system (excluding LCD monitor system) and operation button system on rear case side: Use the check points on the MAN and GSL-3M/L circuit boards for troubleshooting.

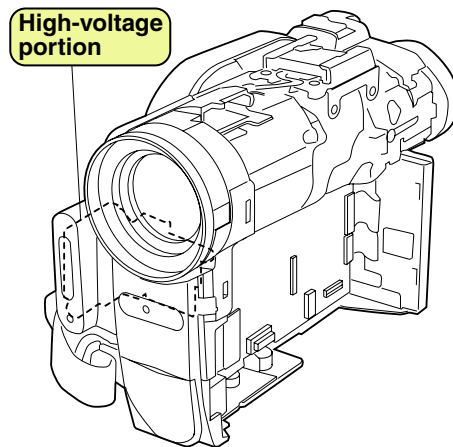


Fig. 4-5-1 Service Position (A)

Use the reverse procedure of removal to reattach the GSL-3M/L circuit board (camera block), MAN circuit board, rear block and front block to the R block. Securely connect the MAN circuit board, disc drive unit and GSL-3M/L circuit board at this time.

- (a) GSL-3M/L circuit board
- (b) Camera block
- (c) MAN circuit board
- (d) Rear block
- (e) Front block
- (f) R block
- (g) DVD drive unit
- (h) SHE-H circuit board

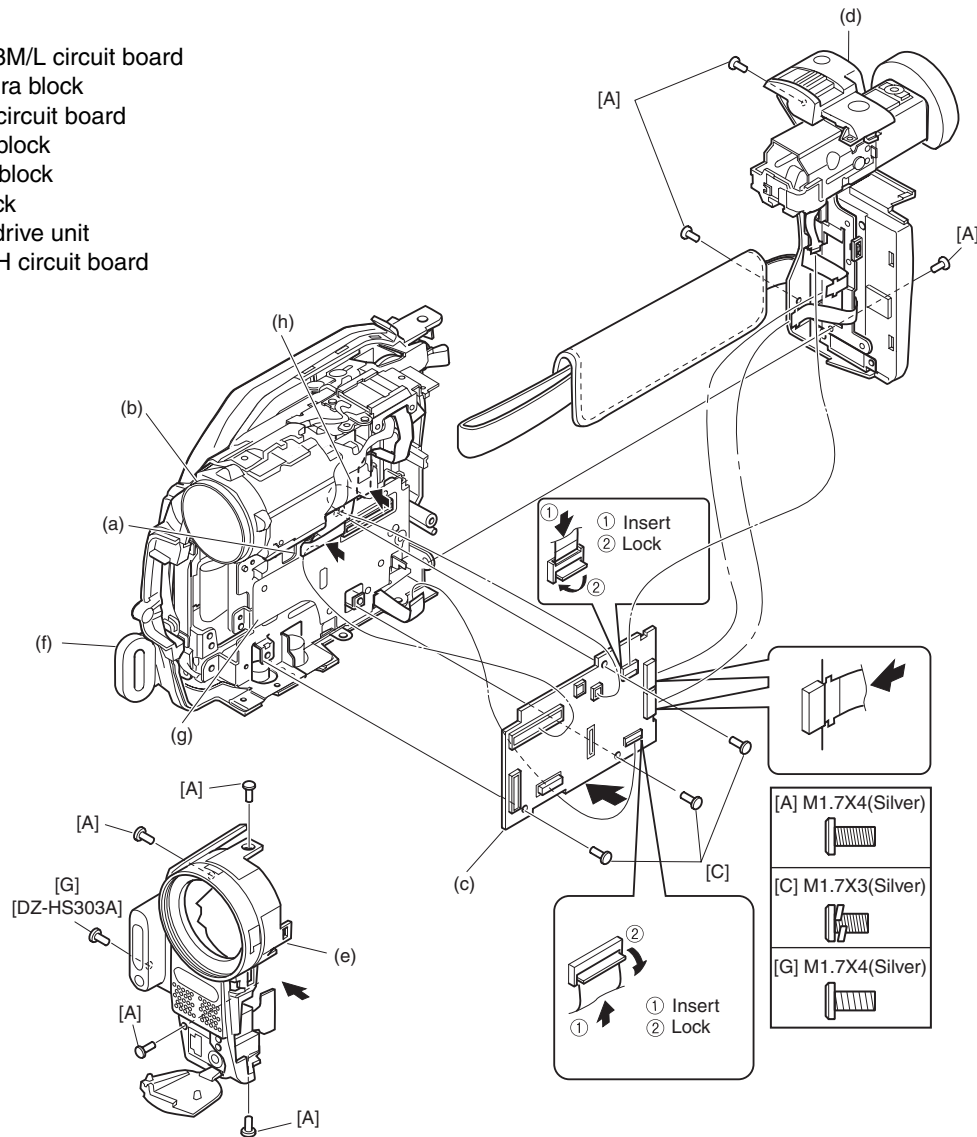


Fig. 4-5-2 Setting to Service Position (A)

## (2) Setting to service position (B)

Service position (B) is used to troubleshoot the LCD monitor system and operation button system on L side case. Use the check points on MAN circuit board for troubleshooting.

After removing the L block, plug the connector of speaker cables and the LMF-H/L circuit board into MAN circuit board.

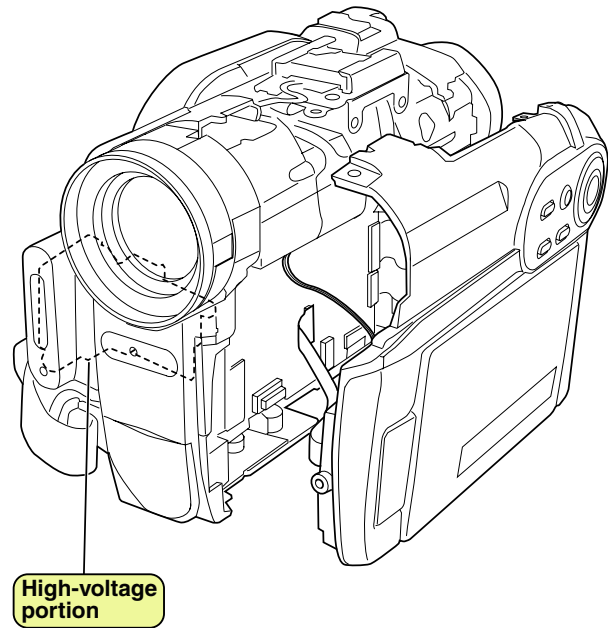


Fig. 4-5-3 Service Position (B)

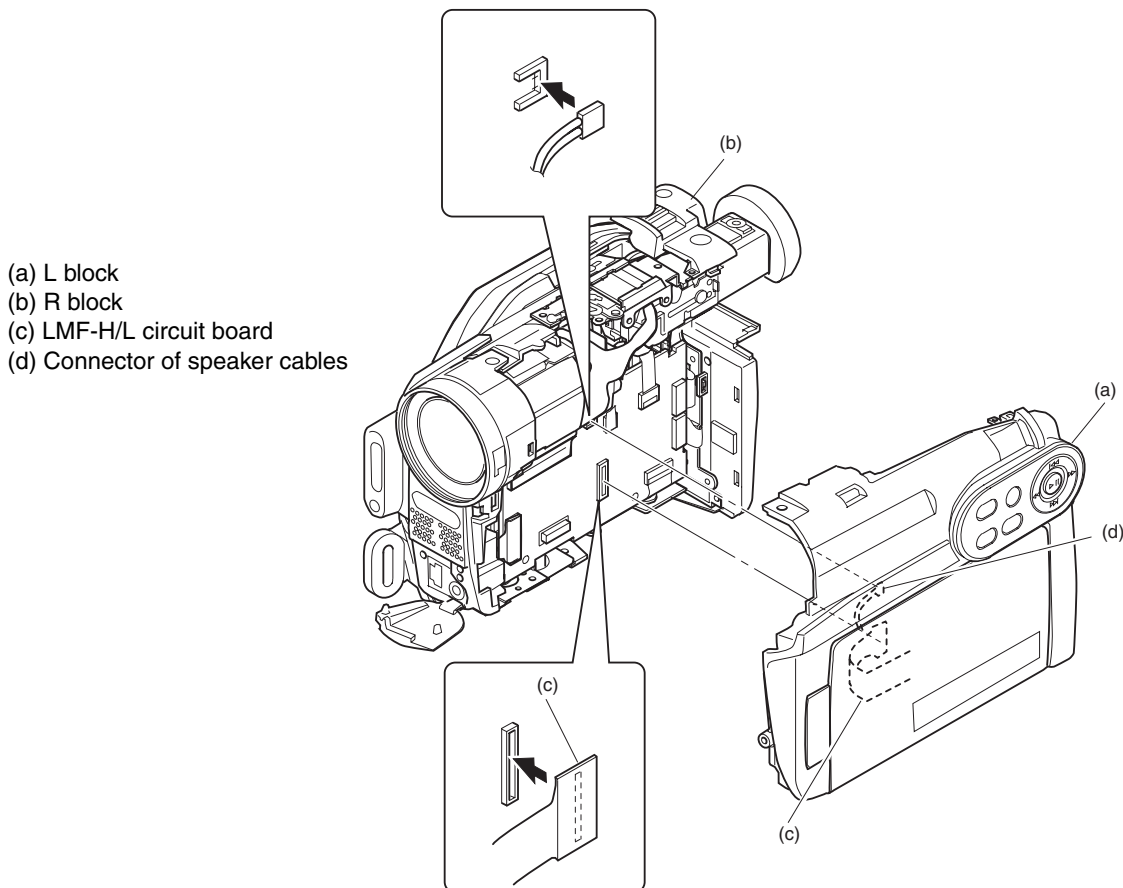


Fig. 4-5-4 Setting to Service Position (B)

## 4-6 Procedure for Removing DVD from Faulty DVD Video Camera/Recorder

### 4-6-1 Items to be checked

Connect the AC adapter/charger or battery (power supply) to the DVD video camera/recorder, and set the power switch to “DVD” or “OFF”: Make sure that the ACCESS indicator turns off, and then press the DISC EJECT button.

Even with a normal product, the DVD cannot be removed while the ACCESS indicator is lit or blinking. Also, when the power switch is set to “HDD” or “SD”, a DVD cannot be removed.

**Information:**

Be sure to connect the AC adapter/charger or charged battery pack (power supply) before pressing the DISC EJECT button.

The DISC EJECT button will not work unless a power supply is connected.

### 4-6-2 How to remove DVD

If the DVD cannot be removed after performing “4-6-1 Items to be checked”, remove it using the procedure in this section.

**Cautions**

Laser light striking the eye may cause your eyesight to be lost: For safety, be sure to remove any power supply (AC adapter/charger, battery, etc.) from the DVD video camera/recorder before starting work.

**Information:**

Numbers in the procedural diagram are step numbers of procedure, and letters in brackets [ ] show the types of screw.

- 1) Remove screw [A].
- 2) Remove the top cover (a) in the direction of the arrow.
- 3) Use a fine-tipped flat-bladed screwdriver, etc. to move the lock slider (b) in the direction of the arrow, and then open the disc cover.
- 4) After removing the DVD, close the DVD cover. When reassembling the removed parts, use the reverse procedure to removal.

- (a) Top cover
- (b) Lock slider
- (c) Top plate (accessory shoe)

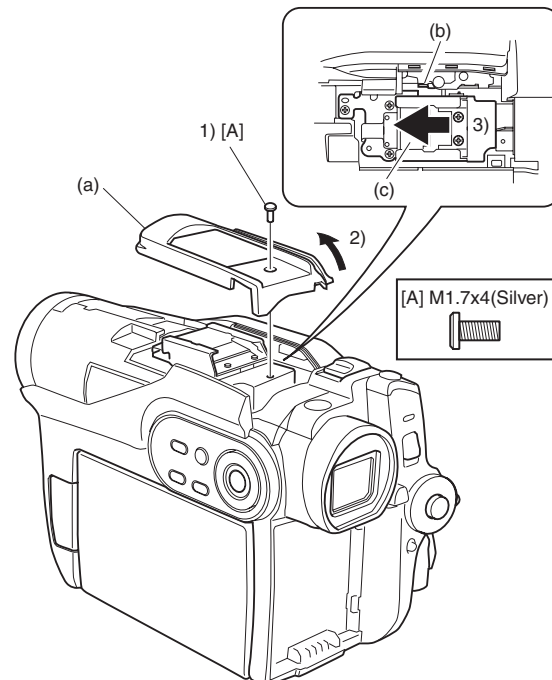


Fig. 4-6-1 How to remove DVD

## 4-7 System Resetting/Resetting Camera Functions

The DVD video camera/recorder has two types of reset function: “System reset” and “Resetting camera functions”. The reset operation will return the various settings to the defaults when the DVD video camera/recorder was shipped from factory.

### 4-7-1 List of items to be reset

Table 4-7-1 shows the items that will be reset to defaults at the factory by the two types of reset operation: “system reset” and “resetting camera functions”. Check the settings of the received device.

Use the memo column in the table to enter the settings of any received device.

#### (1) Procedure for checking settings

- 1) Set the power switch to “OFF” and use a battery or the AC adapter/charger to power the DVD video camera/recorder.
- 2) Insert a DVD-RAM, and then set the power switch to “DVD”. For subsequent steps, operate the DVD video camera/recorder while viewing the LCD monitor or viewfinder.
- 3) Press the MENU button to display the Camera Functions Setup screen, and then check the settings. Do not press the QUICK MENU button at this time: The settings cannot be confirmed.
- 4) Operate the **◀◀** / **▶▶** / **◀◀** / **▶▶** buttons to display the screens for the record function setup, date function setup, EVF/LCD setup and initial setup, in sequence, making sure of the settings.  
At this time, the instructions on still recording will not appear: Check them in steps 6) and 7).
- 5) Set the power switch to “SD”. It is not necessary to insert a card at this time.
- 6) With the DZ-HS303A, press the MENU button to display the Camera Functions Setup screen, and then check the setting on built-in flash.
- 7) Use the **◀◀** / **▶▶** / **◀◀** / **▶▶** buttons to display the Record Functions Setup screen, and then check the settings on photo quality, self-timer, etc.
- 8) After checking is complete, press the STOP/CANCEL or MENU button to restore the ordinary screen.

#### Information:

The menu item “HDD Protection”, displayed on the Record Functions Setup screen when the power switch is set to “HDD”, will automatically switch to “On” when the DVD video camera/recorder is turned on again, even if it has been set to “Off”.

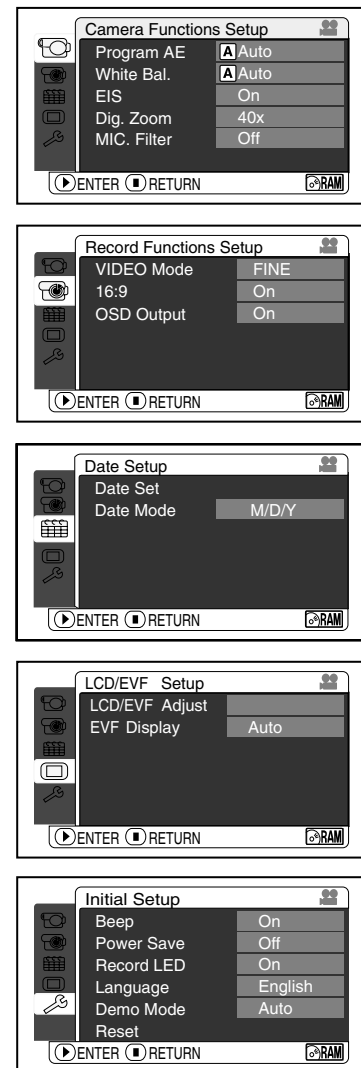


Fig. 4-7-1 Example of setup screens

Yes: Will be reset




No: Will not be reset

Table 4-7-1 List of items to be reset

Item	System reset	Camera function reset	Default at factory	Setting range	Remarks	Memo
<b>Camera Functions Setup</b>						
Program AE	Yes	Yes	Auto	Auto, Sports, Portrait, Spotlight, Sand & Snow, Low Light		
White Bal.	Yes	Yes	Auto	Auto, Set, Outdoor, Indoor 1, Indoor 2		
EIS	Yes	Yes	On	On, Off	Displayed only in the DVD or HDD mode.	
Dig. Zoom	Yes	Yes	40x/ 100x <sup>(*)1</sup>	500x/1200x <sup>(*)2</sup> , 40x/100x <sup>(*)1</sup> , Off	Maximum 40x/100x <sup>(*)1</sup> SD mode even if set to 500x/1200x <sup>(*)2</sup> .	
MIC Filter	Yes	Yes	Off	On, Off	Displayed only in the DVD or HDD mode.	
Flash	Yes	Yes	Auto	Auto, On, Off	Displayed only in the SD mode. [DZ-HS303A only]	
<b>Record Functions Setup</b>						
VIDEO Mode	Yes	Yes	FINE	XTRA, FINE, STD	Displayed only in the DVD or HDD mode.	
Quality	Yes	Yes	FINE	FINE, NORM, ECO	Displayed only in the SD mode	
16:9	Yes	Yes	On	On, Off	Displayed only in the DVD or HDD mode.	
Input Source	Yes	Yes	CAMERA	CAMERA, LINE, S LINE	DZ-HS303A only	
PHOTO Input	Yes	Yes	Field	Frame, Field	Displayed in SD mode and When Input Source is set to LINE/S LINE. [DZ-HS303A only]	
Self Timer	Yes	Yes	Off	On, Off	Displayed only in the SD mode.	
OSD Output	Yes	Yes	On	On, Off		
HDD Protection	Yes	Yes	On	On, Off	"Off" setting will return to "On" when power restarts.	

\*1: "40x" on DZ-HS303A; "100x" on DZ-HS300A.

\*2: "500x" on DZ-HS303A; "1200x" on DZ-HS300A.

Item	System reset	Camera function reset	Default at factory	Setting range	Remarks	Memo
Date Setup						
Date Set	Yes	No	1/1/2006 0:00 AM	-----		
Date Mode	Yes	Yes	M/D/Y	5:00PM M/D/Y, 17:00 D/M/Y, PM5:00 Y/M/D		
LCD/EVF Setup						
LCD Brightness	Yes	Yes	Center			
EVF Brightness	Yes	Yes	Center			
Color Level	Yes	Yes	Center			
EVF Display	Yes	Yes	Auto	Auto, On		
Initial Setup						
Beep	Yes	Yes	On	On, Off		
Power Save	Yes	Yes	Off	On, Off		
Record LED	Yes	Yes	On	On, Off		
Language	Yes	Yes	English	English, French, Spanish, German, Italian 簡体字、繁体字		
Demo Mode	Yes	Yes	Auto	Auto, Off, Start		

## 4-7-2 System reset procedure

**Note:**

- 1) Always perform system reset after completing repair: System reset will erase all error codes stored in flash memory.
- 2) Remove the DVD before executing system reset: Executing system reset with a +RW loaded may erase the recorded data.

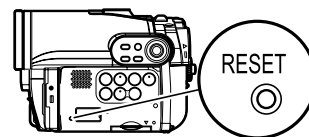


Fig 4-7-2 Reset switch position

- 1) Set the power switch to “OFF”, and then disconnect the battery or AC adapter/charger.
- 2) Use a fine tipped pen, etc. to push the RESET button.

### 4-7-3 Procedure for resetting camera functions

- 1) Connect a battery or AC adapter/charger to power the DVD video camera/recorder.
- 2) Set the power switch to except for “OFF”; loading DVD/SD memory cord is not necessary at this time. For the following steps, operate DVD video camera/recorder while viewing the LCD monitor or viewfinder.
- 3) Press the MENU button to display the camera function setup screen.
- 4) Use the **◀◀ / ▶▶ / ◀◀ / ▶▶** buttons to choose “Initial Setup”, and then press the **▶/||** button.
- 5) Use the **◀◀ / ▶▶ / ◀◀ / ▶▶** buttons to choose “Reset”, and then press the **▶/||** button: The screen for verifying reset will appear.
- 6) Use the **◀◀ / ▶▶ / ◀◀ / ▶▶** buttons to choose “YES”, and then press the **▶/||** button: Reset will be executed.
- 7) After reset, press the STOP/CANCEL or MENU button to close the camera function setup screen.

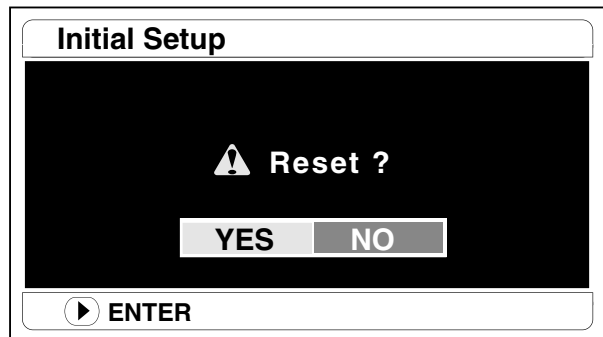
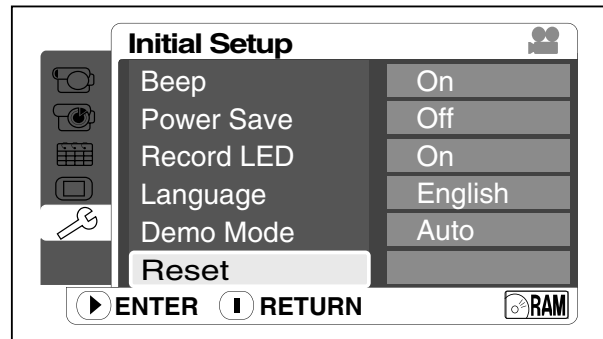


Fig 4-7-2 Example of reset screens

## 5 Disassembly and Reassembly

### Note:

- 1) This chapter includes information on DZ-HS303A/HS300A/GX3300A/GX3200A/GX3100A/BX37A/BX35A.
- 2) Even if the shapes of parts are different, the following disassembly procedure, using the DZ-GX3200A, is the same for all models.

### Caution

Since the DZ-HS303A/GX3300A incorporates high-voltage circuits, take electric charge prevention measures, such as wearing gloves, and take great care when performing work.

## 5-1 Items to Be Checked

### (1) Checking Disc

Connect the AC adapter/charger or battery to the DVD video camera/recorder, and set the power switch to "OFF" or "DVD". Then press the DISC EJECT button and make sure that no DVD is loaded. After checking, close the disc insertion block. If the disc insertion block does not open normally, remove the top cover, and then move the lock slider in the direction of the arrow to open the block.

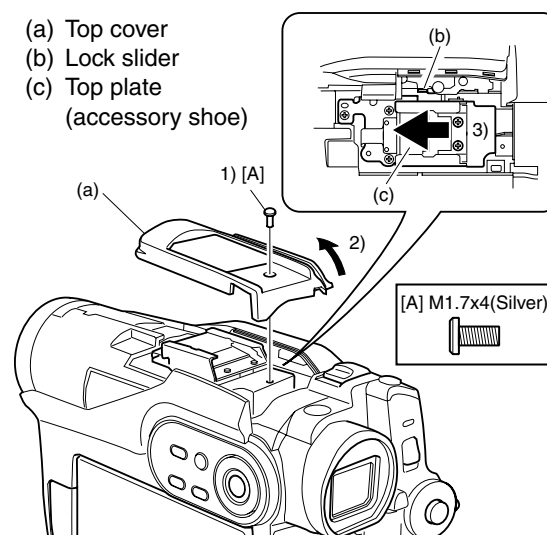


Fig. 5-1-1 How to open the disc insertion block

### (2) Checking Card

Make sure that no card is loaded in the card slot, and then, close the card slot cover.

### Caution

Laser light striking the eye may cause your eyesight to be lost: For safety, be sure to remove any power supply (AC adapter/charger, battery, etc.) from the DVD video camera/recorder before starting work.

### (3) Names of Major Circuit Boards and Units

- (a) DVD drive unit
- (b) FRT-H/M/L circuit board
- (c) AVJ-H/M/L circuit board
- (d) HDF circuit board [For DZ-HS303A/HS300A]
- (e) HDD unit [For DZ-HS303A/HS300A]
- (f) LCD unit
- (g) Lens unit
- (h) GSL-3M/2M/1M/L circuit board
- (i) SHE-H circuit board
- (j) EVF unit
- (k) MAN circuit board
- (l) SDL circuit board
- (m) LMF-H/M/L circuit board

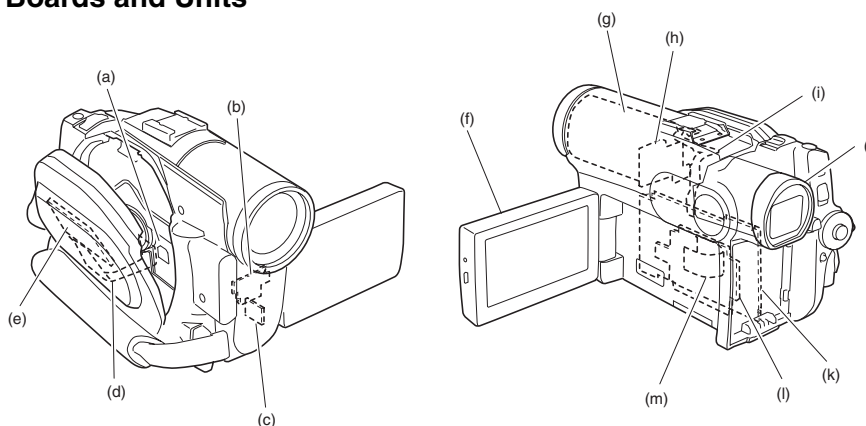


Fig. 5-1-2

## 5-2 Order of Disassembly

- 1) Refer to the disassembly flowchart in Figs. 5-2-1 for the order of removing each component.  
Unless otherwise specified, use the reverse procedure to reassemble the removed components.
- 2) When replacing the MAN circuit board, it is recommended that you back up the EEPROM data in advance, referring to “5-4 EEPROM data backup and write”; write the EEPROM data after replacing the MAN circuit board.
- 3) After replacing any circuit boards and any units, perform any necessary adjustments according to “6-3-2 List of adjustments needed after replacing major components”.

### Note:

When replacing components, be sure to use only those shown in “Replacement Parts List”.

### Reading Disassembly Flowchart:

After locating the target component in the flowchart, remove all components in sequence until the target is reached, following the arrows (routes) from the top left of flowchart. If multiple routes exist to the target component from the top of flowchart, remove all the components on all the routes.

### Disassembly Flowchart

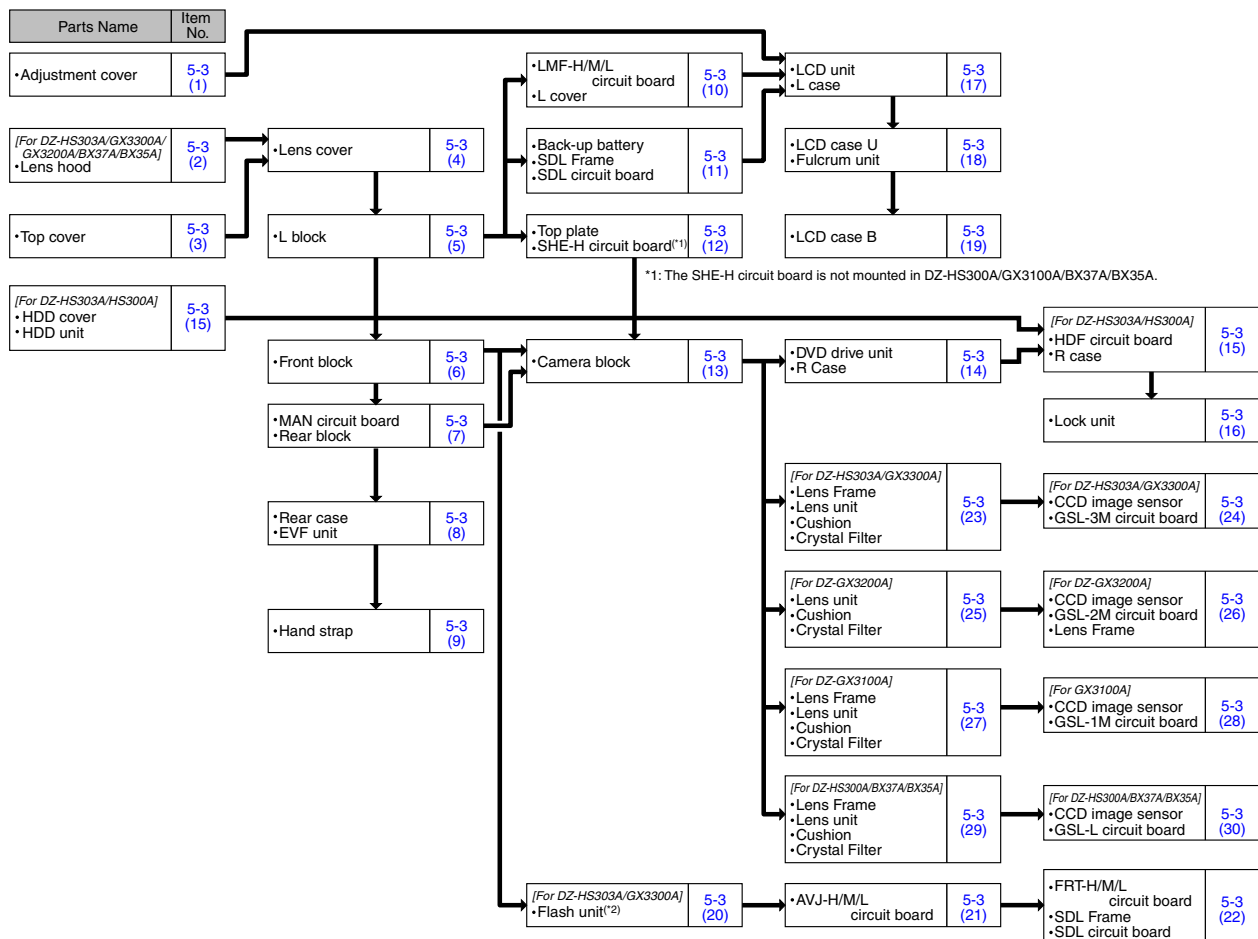


Fig. 5-2-1 Disassembly Flowchart

## 5-3 Disassembly

### Information:

Numbers in the disassembly procedure diagrams are step numbers of disassembly procedures, and letters in brackets [ ] show the types of screw.

### (1) Adjustment Cover

- 1) Open the LCD monitor section (b) in the direction of the arrow.
- 2) Insert a fine-tipped flat-bladed screwdriver (c) into the groove in adjustment cover (a), and remove the cover from L case (d) in the direction of the arrow. Be very careful not to scratch the cover or L case with screwdriver.

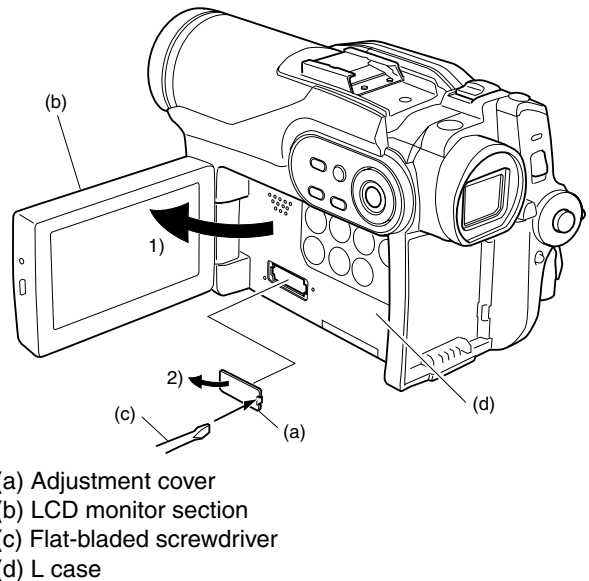


Fig. 5-3-1

### (2) Lens Hood [For DZ-HS303A/HS300A/ GX3300A/GX3200A/BX37A/BX35A]

- 1) Turn the lens hood (a) in the direction of the arrow to remove it.

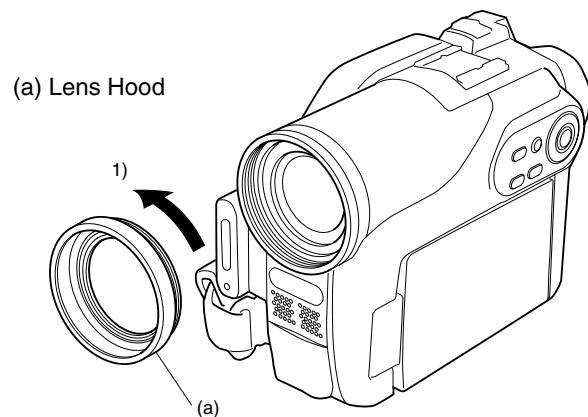


Fig. 5-3-2

### (3) Top Cover

- 1) Remove the screw [A].
- 2) Remove the top cover (a) in the direction of the arrow.

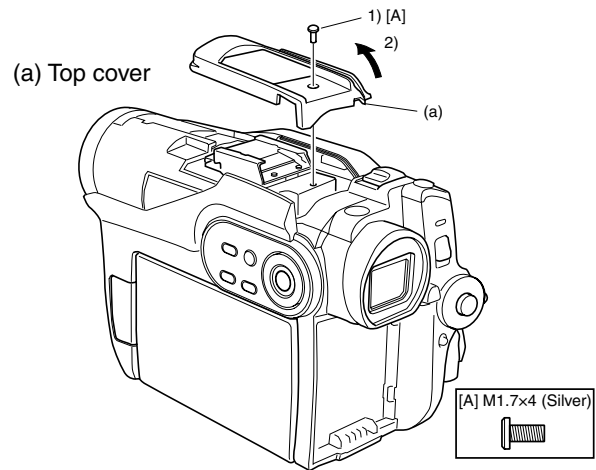


Fig. 5-3-3

### (4) Lens Cover

■DZ-HS303A/HS300A/GX3300A/GX3200A/  
BX37A/BX35A

- 1) Remove the screw [A].
- 2) Remove the lens cover (a) in the direction of the arrow.

■DZ-GX3100A

- 1) Remove the screw [A].
- 2) Use the two tabs of lens cover (a) as a fulcrum to lift the screw-tightened portion by approx. 15°, and then remove the lens cover in the direction of the arrow.  
Take care not to damage the two tabs at this time.

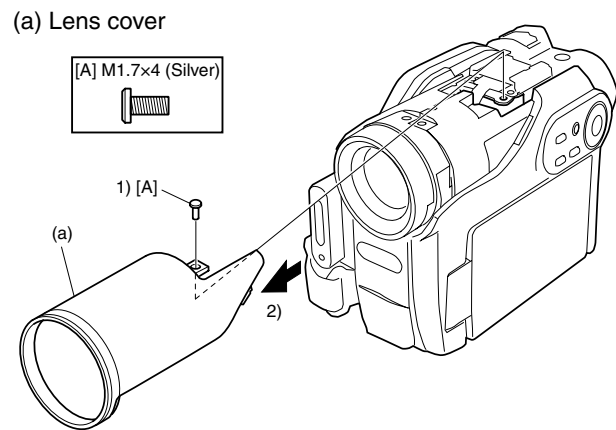


Fig. 5-3-4A DZ-HS303A/HS300A/GX3300A/  
GX3200A/BX37A/BX35A

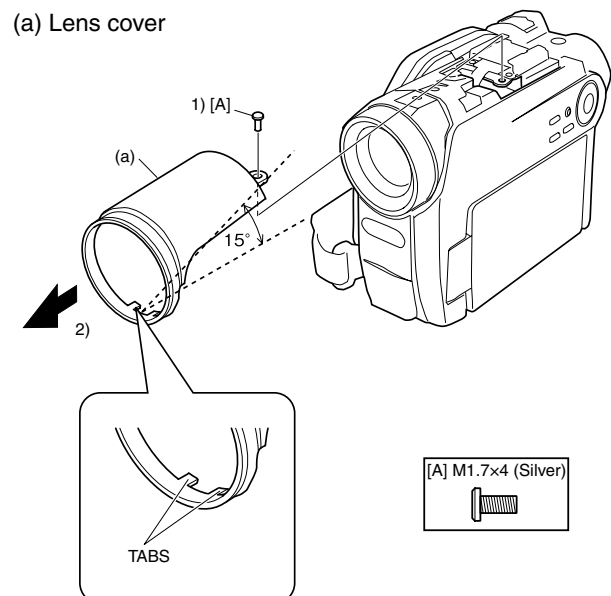


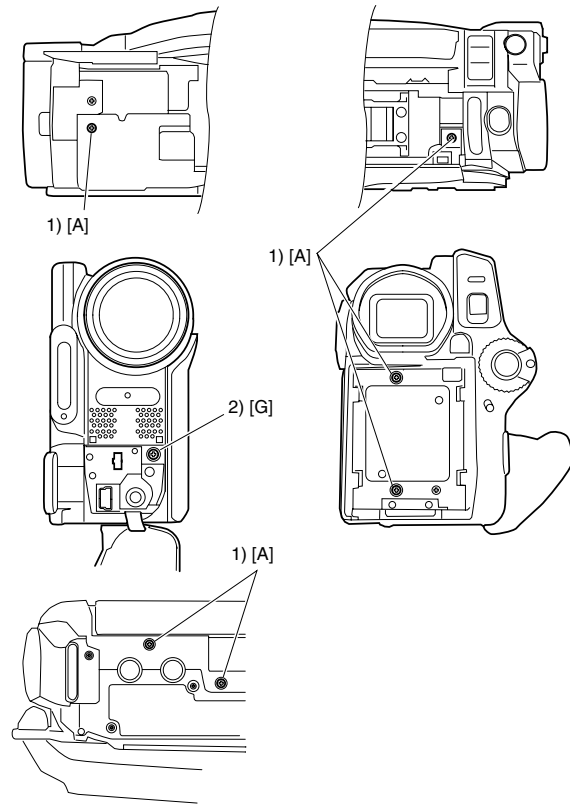
Fig. 5-3-4B DZ-GX3100A

## (5) L Block

■DZ-HS303A/HS300A/GX3300A/GX3200A/BX37A/BX35A

- 1) Remove the six screws [A].
- 2) Open the jack cover (e) and then remove the screw [G].
- 3) Open the L block in the direction of the arrow from the rear side.  
Take care at this time that the LMF-H/L circuit board and two speaker cables between the L and R blocks do not get disconnected.
- 4) Unplug the speaker cable connector (c).
- 5) Remove the LMF-H/L circuit board (d).

**Caution during disassembly and reassembly:**  
Securely plug the connector (speaker cable connector) into the LMF-H/L circuit board.



Detailed view of screw positions

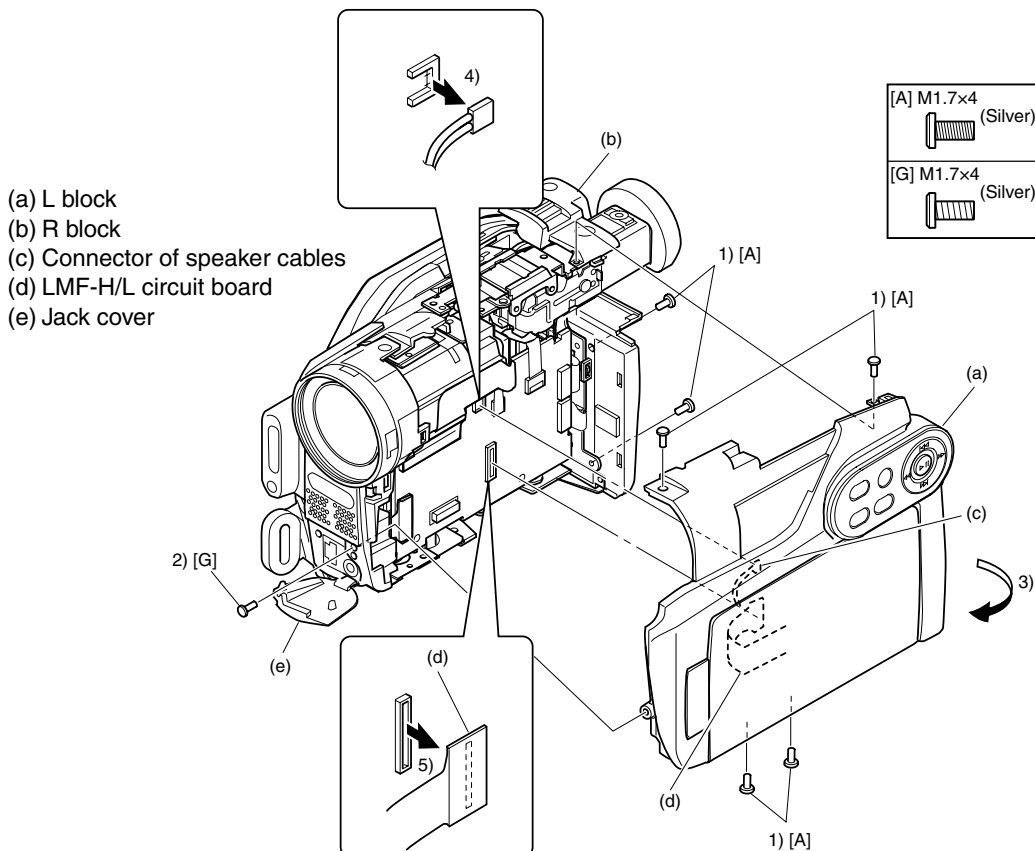


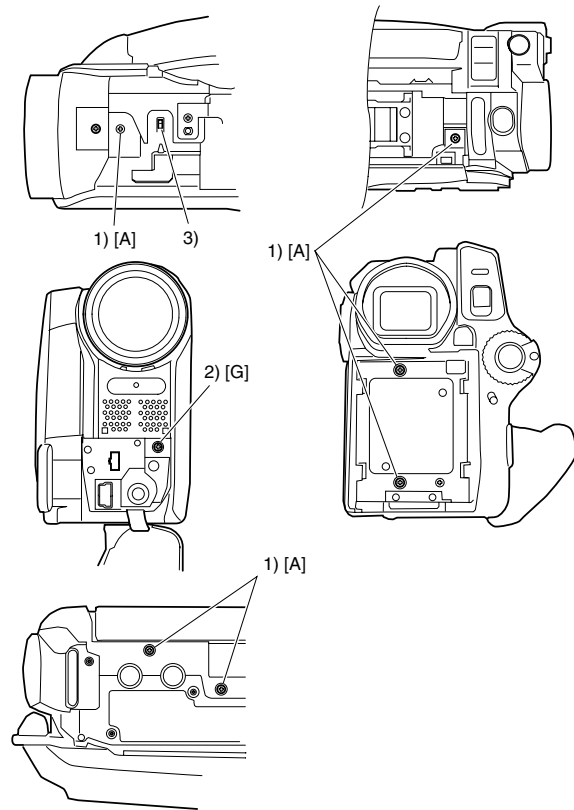
Fig. 5-3-5A DZ-HS303A/HS300A/GX3300A/GX3200A/BX37A/BX35A

■DZ-GX3100A

- 1) Remove the six screws [A].
- 2) Open the jack cover (e) and remove the screw [G].
- 3) Release the one tab, and open the L block in the direction of the arrow from the rear side. Take care at this time that the LMF-M circuit board and two speaker cables between the L and R blocks do not get disconnected.
- 4) Unplug the speaker cable connector (c).
- 5) Remove the LMF-M circuit board (d).

Caution during disassembly and reassembly:

Securely plug the connector (speaker cable connector) into the LMF-M circuit board.



Detailed view of screw positions

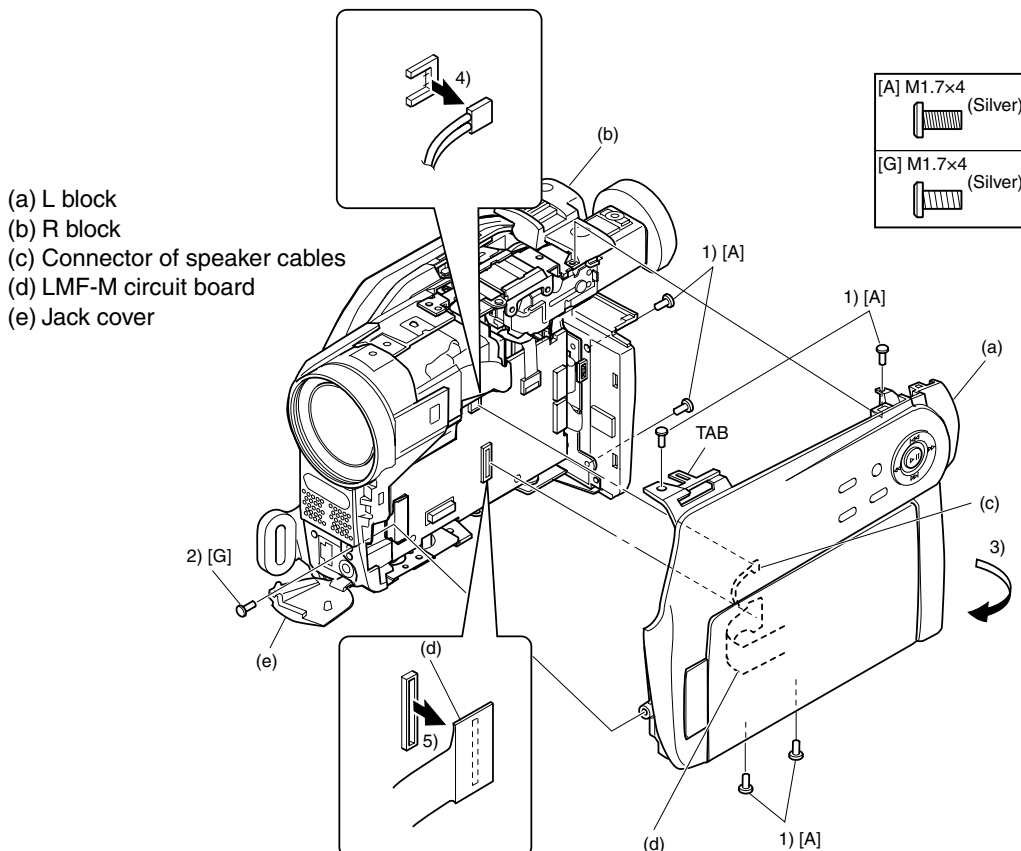
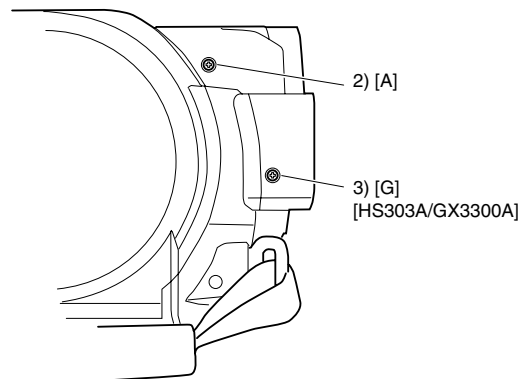


Fig. 5-3-5B DZ-GX3100A

**(6) Front Block****Caution**

A flash unit is mounted in the DZ-HS303A/GX3300A front block. The flash unit generates high voltage: Take shock-preventive measure, such as wearing gloves, etc., and take great care during work: The flash unit maintains a high voltage even if the power supply (AC adapter/charger, battery, etc.) is removed.

- 1) Remove the AVJ-H/L circuit board (c) from MAN circuit board (b) in the direction of the arrow.
- 2) Open the jack cover (d) and then remove the four screws [A].
- 3) With DZ-HS303A/GX3300A, remove the screw [G]
- 4) Remove the front block (a) in the direction of the arrow.



Front right side

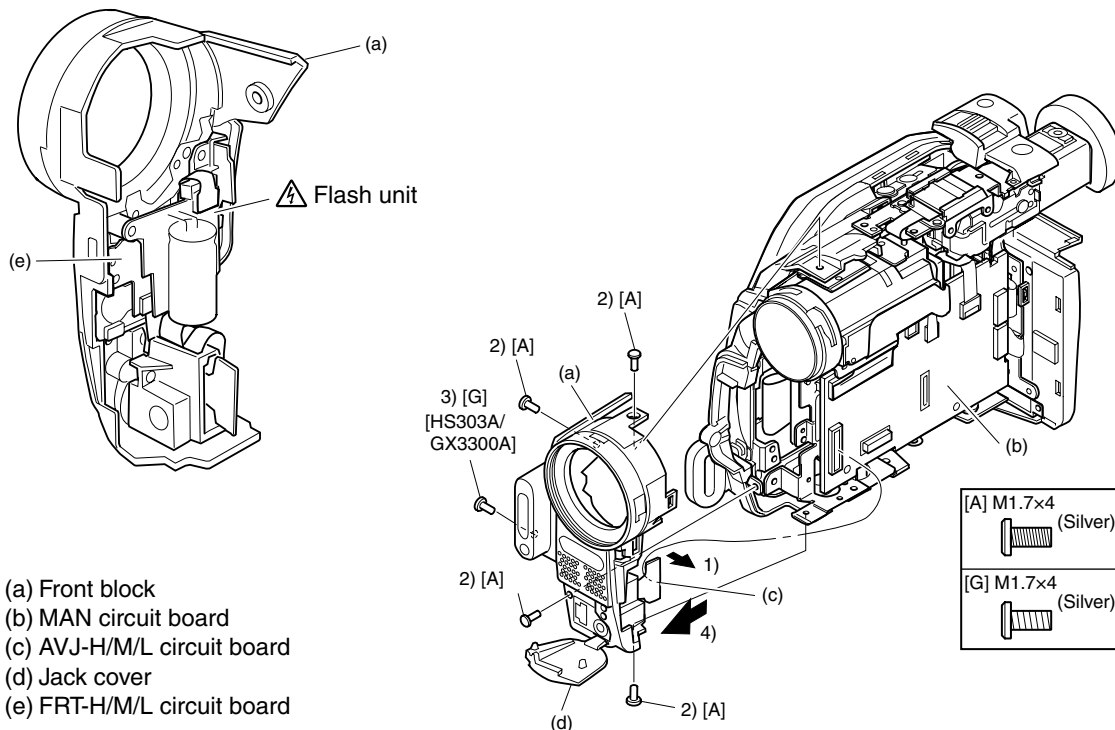
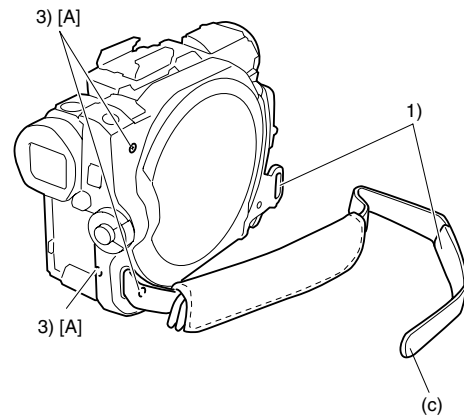


Fig. 5-3-6

**(7) MAN Circuit Board and Rear Block****Information:**

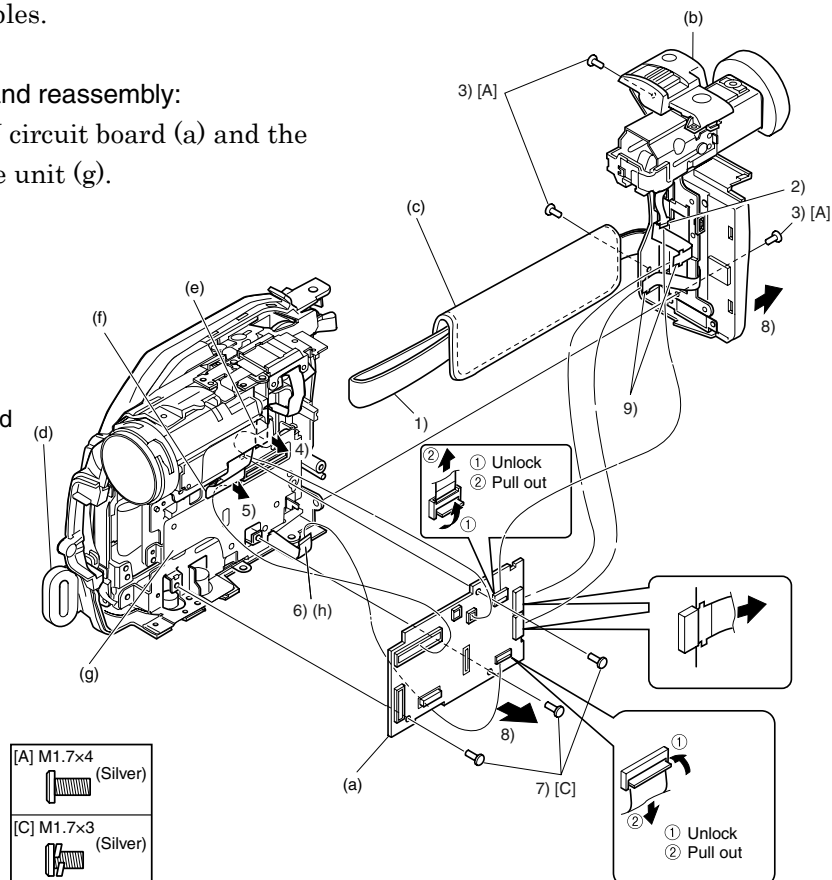
Before replacing the MAN circuit board, refer to “5-4 EEPROM data backup and write”.

- 1) Remove the hand strap (c) from R case (d).
- 2) Disconnect the flat cable of the EVF unit.
- 3) Remove the three screws [A].
- 4) With DZ-HS303A/GX3300A/GX3200A, remove the SHE-H circuit board (e) from the MAN circuit board (a) in the direction of the arrow.
- 5) Remove the GSL-3M/2M/1M/L circuit board (f) from MAN circuit board (a) in the direction of the arrow.
- 6) With DZ-HS303A/HS300A, remove the HDF circuit board (h) from the MAN circuit board (a).
- 7) Remove the three screws [C].
- 8) Remove the MAN circuit board and rear block (b), respectively, in the directions of the arrows. The MAN circuit board is directly connected to a circuit board on the DVD drive unit (g) via connector, so be sure to remove it in the direction of the arrow.
- 9) Disconnect the two flat cables.

**Right side****Caution during disassembly and reassembly:**

Securely connect the MAN circuit board (a) and the circuit board on DVD drive unit (g).

- (a) MAN circuit board
- (b) Rear block
- (c) Hand strap
- (d) R case
- (e) SHE-H circuit board
- (f) GSL-3M/2M/1M/L circuit board
- (g) DVD drive unit
- (h) HDF circuit board

**Fig. 5-3-7**

### (8) Rear Case and EVF Unit

- 1) Pull out the EVF unit (b) in the direction of the arrow.
- 2) Remove the eye cup (c) in the direction of the arrow.
- 3) Remove the screw [A].

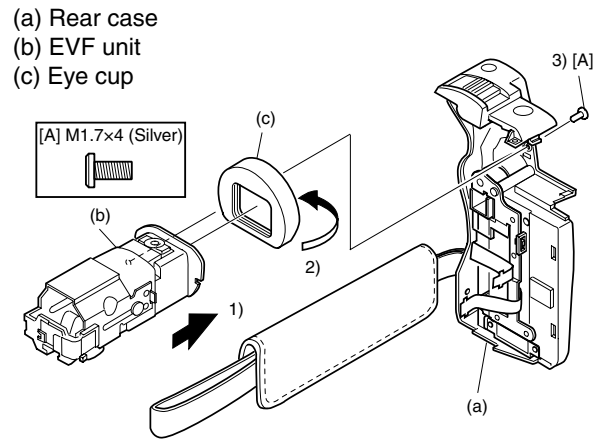


Fig. 5-3-8

### (9) Hand Strap

- 1) Remove the two screws [D].
- 2) Remove the screw [D], taking care because the spring (c) of battery release button (b) may pop out.
- 3) Remove the hand strap (a) in the direction of the arrow, and then pull out the pin (d).

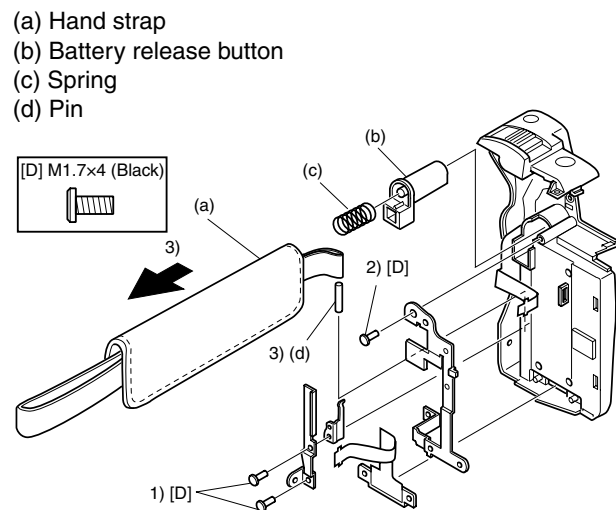


Fig. 5-3-9

### (10) LMF-H/M/L Circuit Board and L cover

- 1) Remove the LMF-H/M/L circuit board (a) in the direction of the arrow.
- 2) Remove the four screws [G].

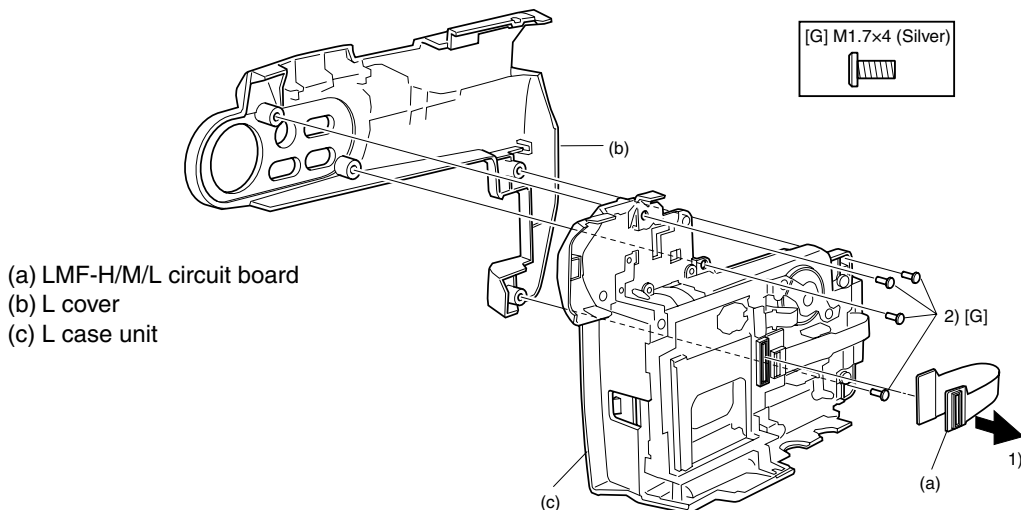


Fig. 5-3-10

### (11) Back-up Battery, SDL Frame and SDL Circuit Board

- 1) Use tweezers, etc. to remove the backup battery (a) in the direction of the arrow. Take care not to damage the battery holder (d) on SDL circuit board at this time.
- 2) Disconnect the two flat cables.
- 3) Remove the three screws [G].
- 4) Remove the SDL frame (b) in the in the direction of the arrow.
- 5) Remove the SDL circuit board (c).

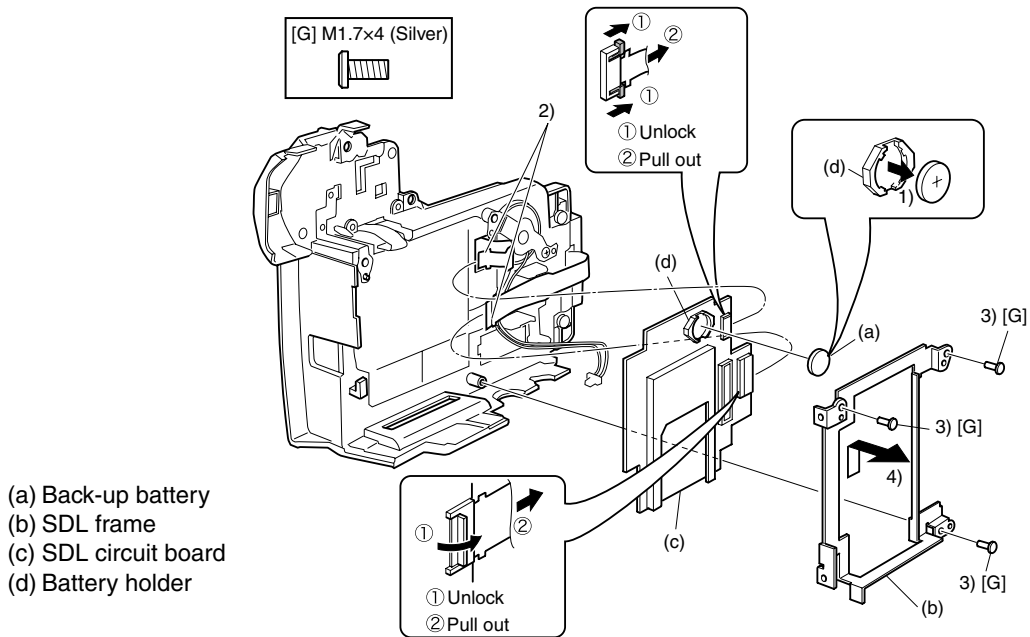


Fig. 5-3-11

## (12) Top Plate and SHE-H Circuit Board

### Information:

- 1) The accessory shoe is not mounted in DZ-HS300A/BX37A/BX35A.
- 2) The SHE-H circuit board is not mounted in DZ-HS300A/GX3100A/BX37A/BX35A.

- 1) Remove the SHE-H circuit board (b) from MAN circuit board (c) in the direction of the arrow.
- 2) Remove the screw [B].
- 3) With DZ-HS303A/GX3300A, remove the screw [B]. With DZ-HS300A/GX3200A/GX3100A/BX37A/BX35A, remove the screw [A].
- 4) Remove the top plate (a) together with SHE-H circuit board in the direction of the arrow.
- 5) Remove the double-sided adhesive tape, and then remove the SHE-H circuit board from accessory shoe in the direction of the arrow.

### Caution during disassembly and reassembly:

Be sure to paste the top plate to the SHE-H circuit board using double-sided adhesive tape.

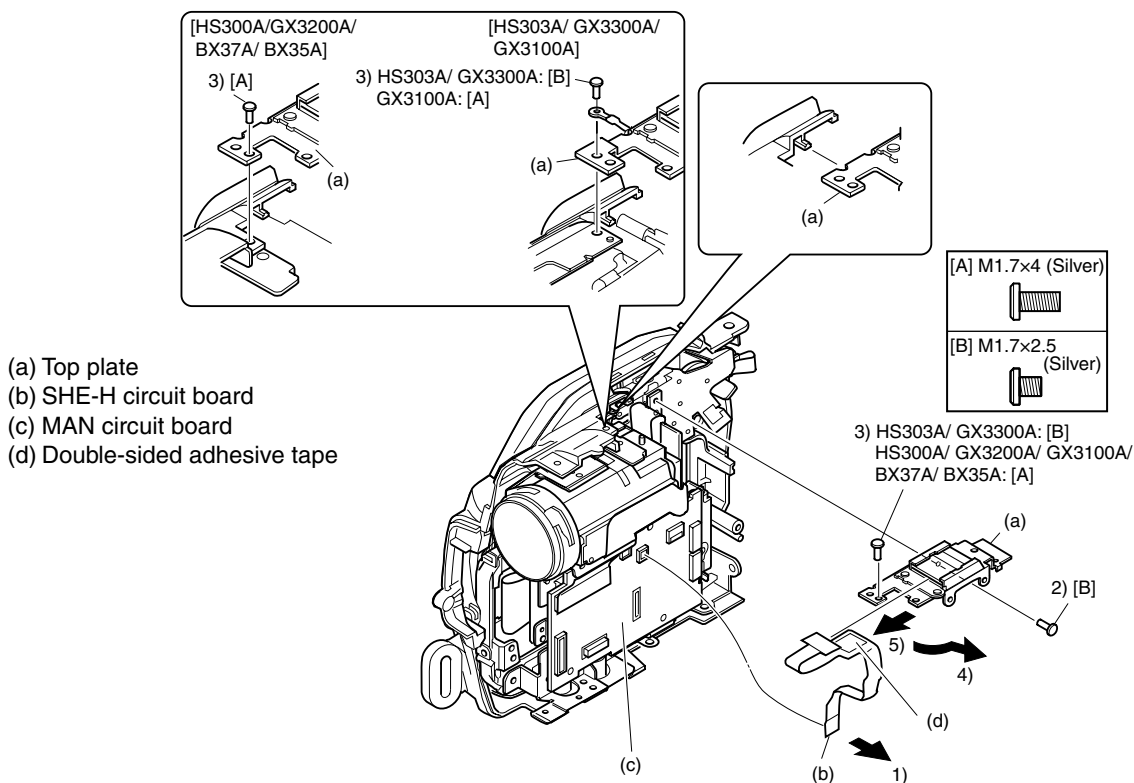


Fig. 5-3-12

**(13) Camera Block**

- 1) Remove the screw [B].

**Note:**

Take great care when handling the camera block: The camera block contains the lens unit, which is a precision component. Subjecting the lens unit to any impact, however slight, could result in a fault.

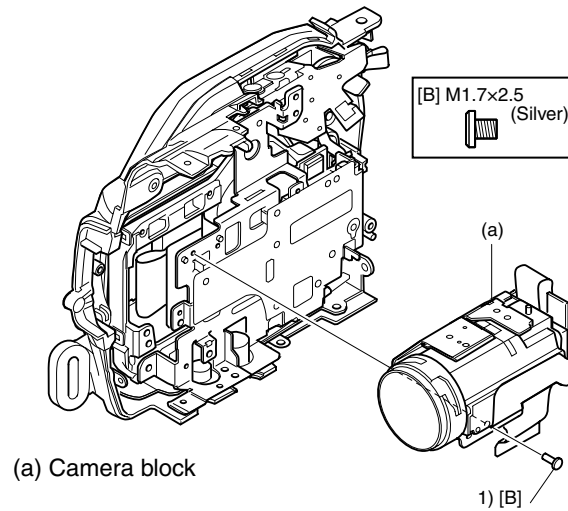


Fig. 5-3-13

**(14) DVD Drive Unit**

- 1) Disconnect the flat cable.
- 2) Remove the two screws [A].
- 3) Remove the two screws [G], and then remove the DVD drive unit (a).

**Note:**

The DVD drive unit is a precision component: Take great care when handling it. Do not subject the DVD drive unit to any impact: Doing so could cause a fault.

**Caution during disassembly and reassembly:**

Be sure to paste the heat sink rubber (c): Neglecting this could cause a fault.

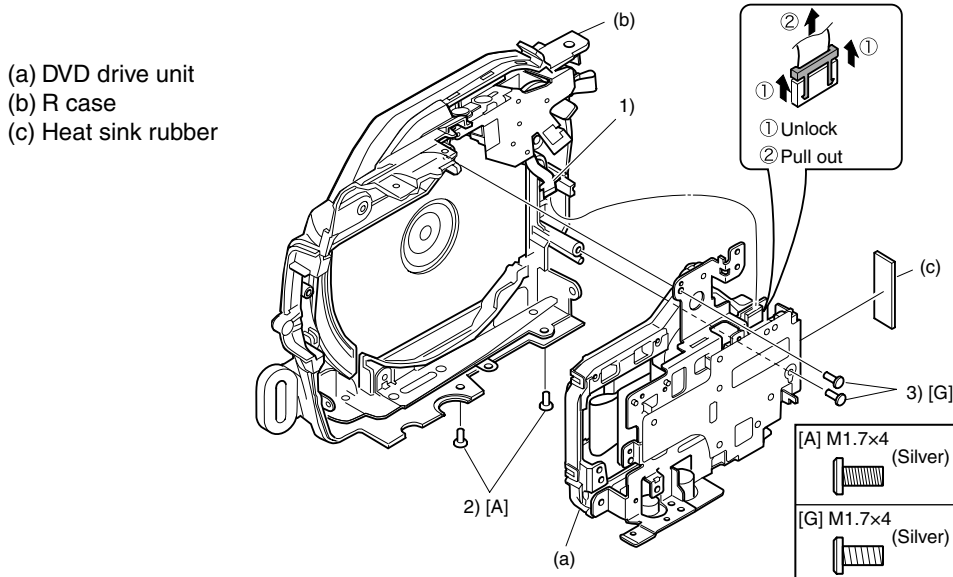


Fig. 5-3-14

### **(15) HDD Cover, HDD Unit, HDF Circuit Board and R Case [DZ-HS303A/HS300A]**

**Information:**

- 1) The HDD cover and HDD unit can be replaced without removing any other components:  
Perform steps 1) – 7) below after opening the disc insertion block using the procedure shown in “5-1 Items to Be Checked”.
- 2) After the HDD unit in DZ-HS303A/HS300A is replaced, a new HDD unit or a used (recorded) HDD unit from another DZ-HS303A/HS300A will be usable without any additional steps (a new HDD unit must be formatted).

**Note:**

- 1) The HDD unit is a very delicate device, extremely susceptible to vibration or impact: Handle it with care, referring to “1-4 Cautions when Handling HDD (Hard Disk Drive) for DVD Video Camera/Recorder”.
- 2) Take care when handling a removed HDD in order to prevent personal data from leaking out. If the data on HDD is erased during the formatting function, it will be readable when special software is used. It is recommended to physically destroy the HDD when discarding it, to prevent data leaks.

- 1) Remove the two screws [G].
- 2) Remove the one screw [G].
- 3) Insert a fine-tipped flat-bladed screwdriver (e) into the hole in the R case, and release the tab (f) of HDD cover in the direction of the arrow: Take care not to scratch the HDD cover (a) or R case (d) at this time.
- 4) Remove the HDD cover in the direction of the arrow. Make sure at this time that neither the HDD cushion (g) nor HDD unit (b) is attached to the HDD cover. If they are attached to the HDD cover, remove them before removing the HDD cover.
- 5) Remove the HDF circuit board (c) from HDD unit (b), and then remove the HDD unit and HDD cushion (g) from R case (d).
- 6) Remove the aluminum tape (h).
- 7) Remove the HDD cushion from HDD unit.
- 8) Pull out the HDF circuit board (c) in the direction of the arrow to remove it from R case.

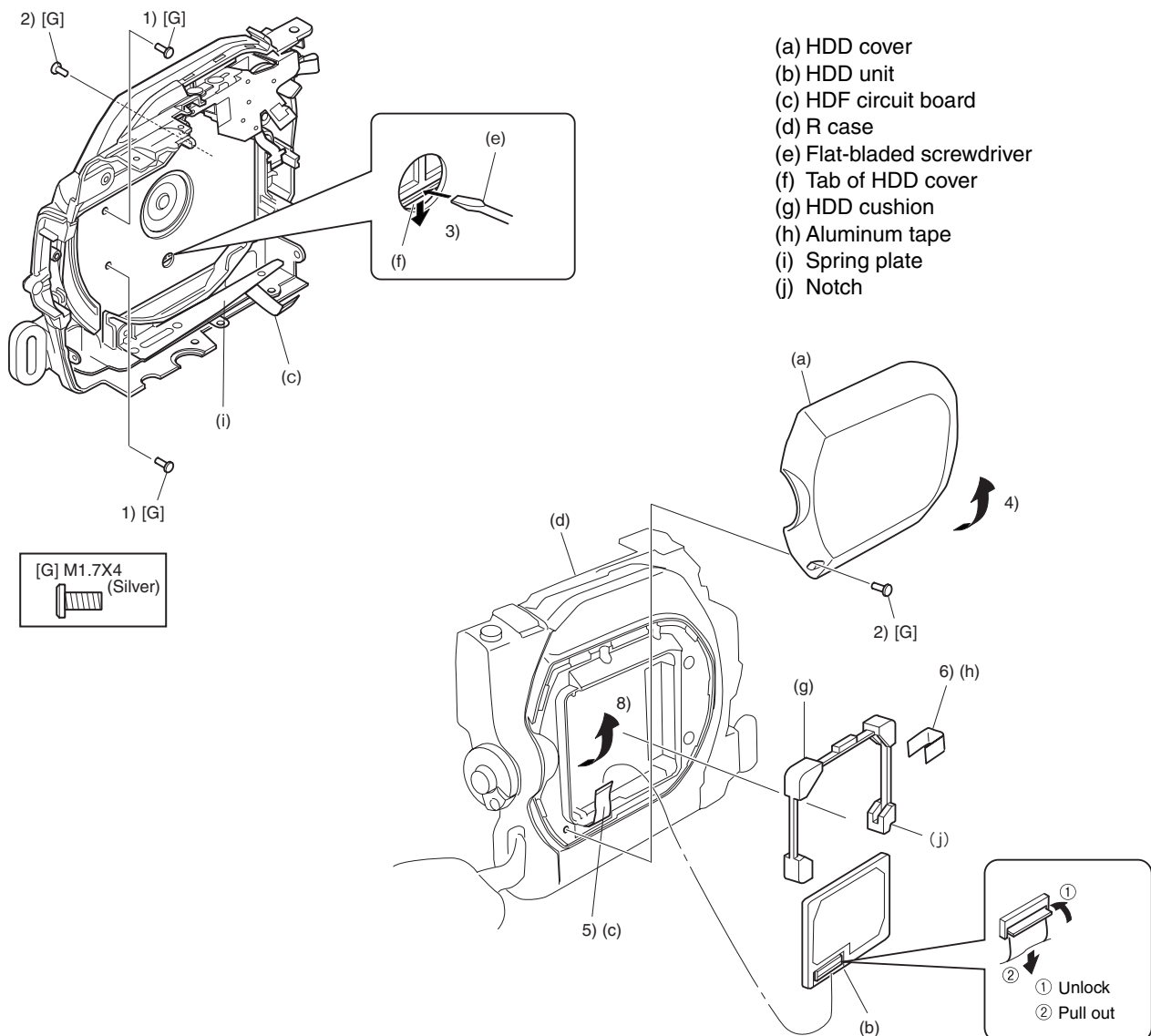
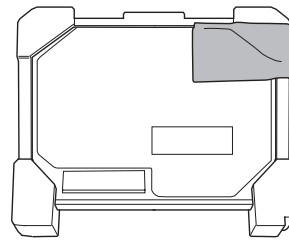
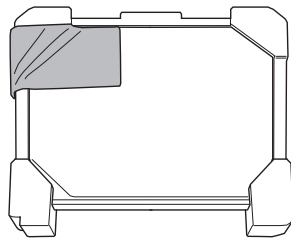


Fig. 5-3-15A

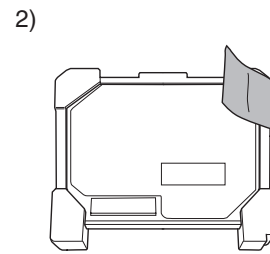
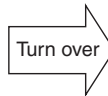
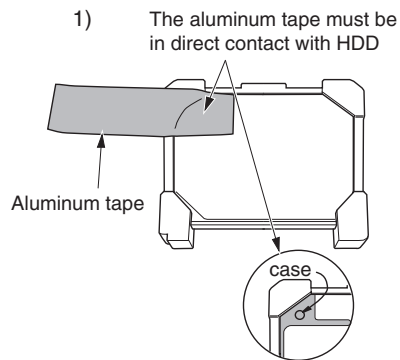
Procedure for reassembly/caution

- 1) Take care with the orientation of HDD cushion: Assemble it with the notched (j) portion facing the front.
- 2) Be sure to use new aluminum tape (h) for reassembly: Paste it as shown in Fig. 5-3-15B.
- 3) Be sure to reassemble the HDF circuit board so that it passes under the plate spring (i): Failure to do so could cause a fault, including wire disconnection.

Aluminum tape pasting position

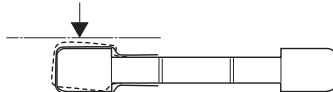


Pasting procedure

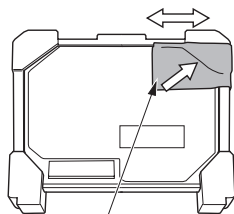


[Caution 1]

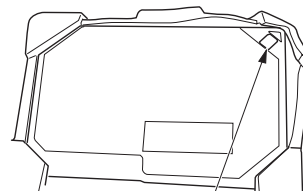
Take care that the HDD damper is not stretched or deformed by aluminum tape: The tape must be parallel.



[Caution 2]



Do not push in the tape using fingers or move it to the left or right:



If the aluminum tape comes in contact with the component, the HDD could malfunction.

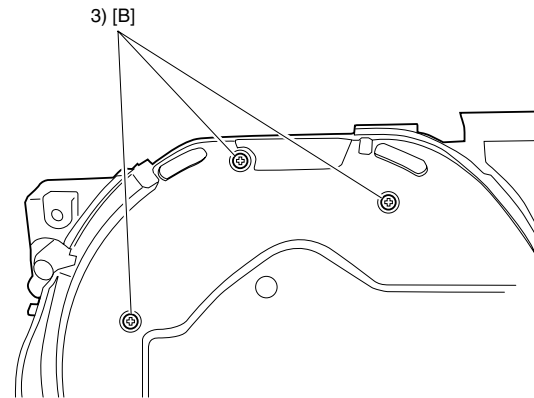
Fig. 5-3-15B Pasting Aluminum Tape

## (16) Lock Unit

- 1) With the disc insertion block closed, remove the screw [D].
- 2) Move the lock slider (c) in the direction of the arrow to open the disc insertion block.
- 3) Remove the four screws [B].

### Caution during disassembly and reassembly:

Be sure to close the disc insertion block before tightening the screw on the switch of lock unit (d), and make sure that the switch is attached as shown in the figure: Screwing the switch with the disc insertion block open could damage it.



Right side

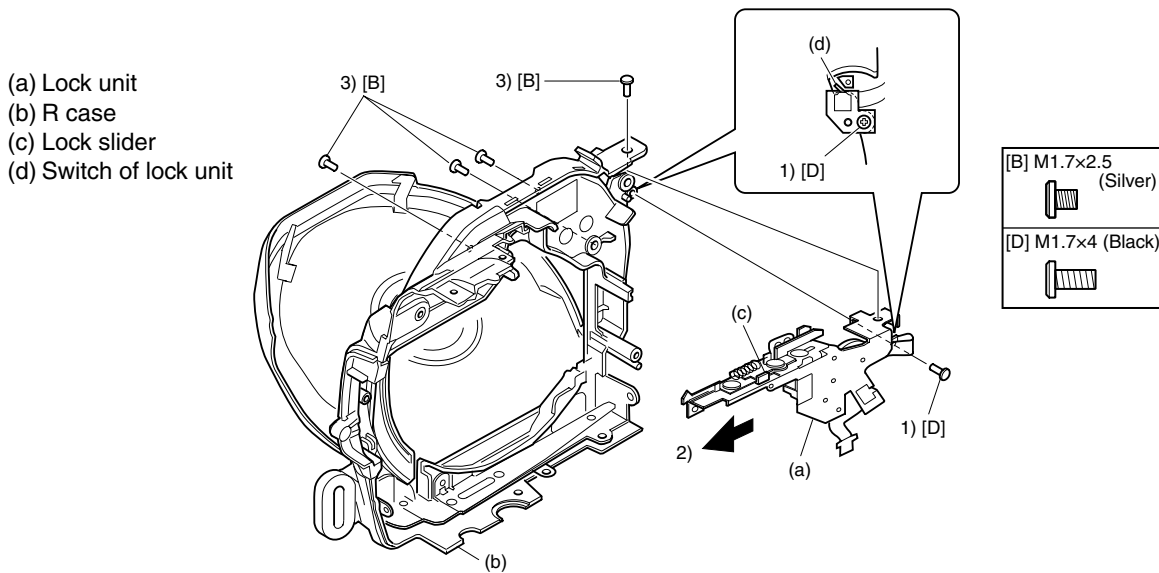


Fig. 5-3-16

### (17) LCD Unit and L Case

- 1) Disconnect the flat cable.
- 2) Remove the two screws [E], taking care not to lose the LCD ground plate (c), which will be detached at this time.

**Note:**

Take great care when handling the LCD unit.

The LCD unit has an LCD panel that is a precision component. Subjecting it to any impact could result in a fault.

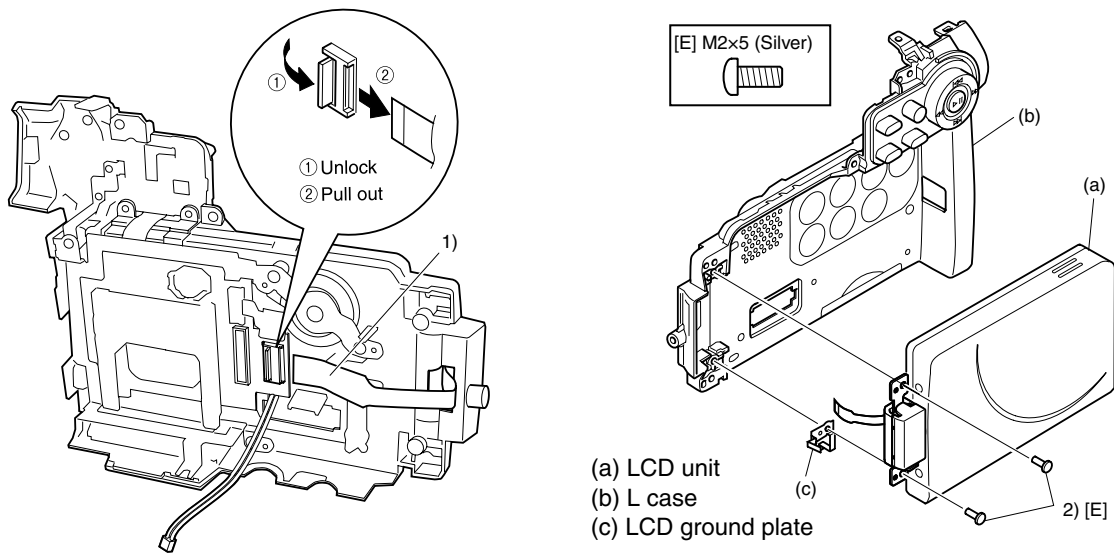


Fig. 5-3-17

### (18) LCD Case U and Fulcrum Unit

- 1) Turn the fulcrum unit (b) 90° in the direction of the arrow.
- 2) Remove the three screws [A].
- 3) Release the seven tabs and remove the LCD case U (a), taking care not to lose the MR sheet (c), which will be detached at this time.
- 4) Release the connection between the LCD circuit board (e) and MR circuit board (d).
- 5) Remove the MR circuit board in the direction of the arrow. The MR circuit board is a film-like board: Do not forcibly fold or bend it.
- 6) Disconnect the flat cable.
- 7) Remove the fulcrum unit in the direction of the arrow.

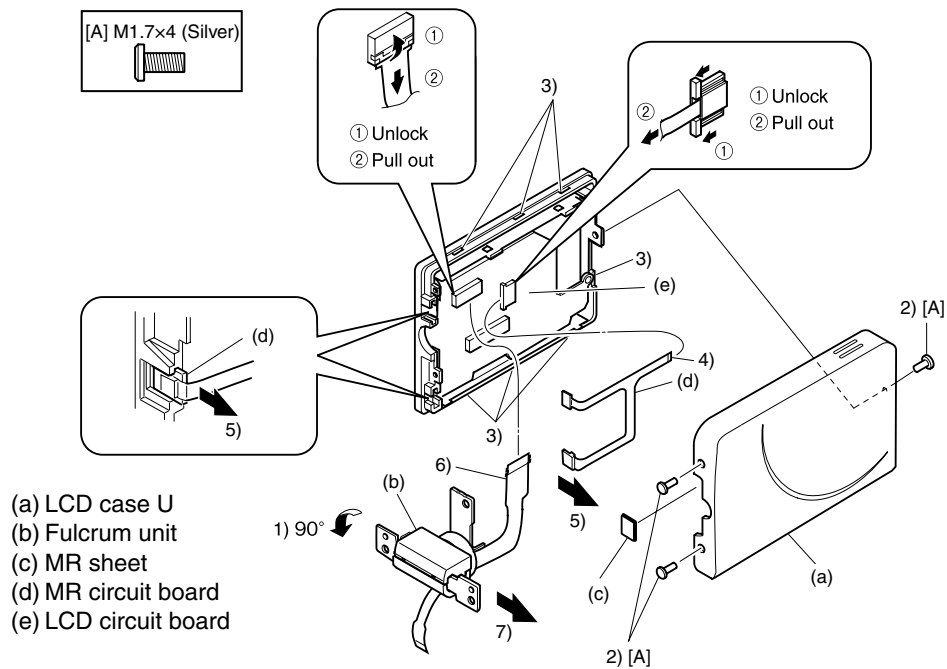


Fig. 5-3-18

### (19) LCD Case B

- 1) Remove the screw [D].
- 2) Remove the LCD case B (a) in the direction of the arrow.

**Note:**

Take care when handling the LCD circuit board (b), monitor sheet (c), and LCD panel/back light unit (d) in the LCD frame (e) : Adherence of foreign object, such as dust, to them, or any scratches or impact, could cause a fault.

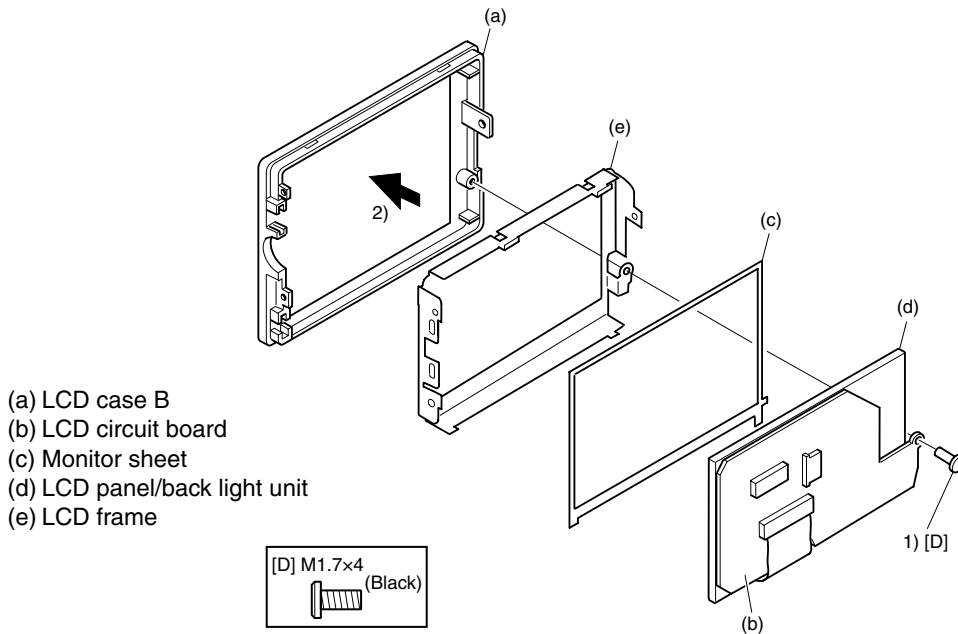


Fig. 5-3-19

**(20) Flash Unit [For DZ-HS303A/ GX3300A]****Caution**

The flash unit generates high voltage: Take shock-preventive measure, such as wearing gloves, etc., and take great care during work: The flash unit maintains a high voltage even if the power supply (AC adapter/charger, battery, etc.) is removed.

- 1) Disconnect the FRT-H circuit board (b) from flash unit (a) in the direction of the arrow.
- 2) Remove the two screws [G].
- 3) Remove the flash unit from the front case (c) in the direction of the arrow.

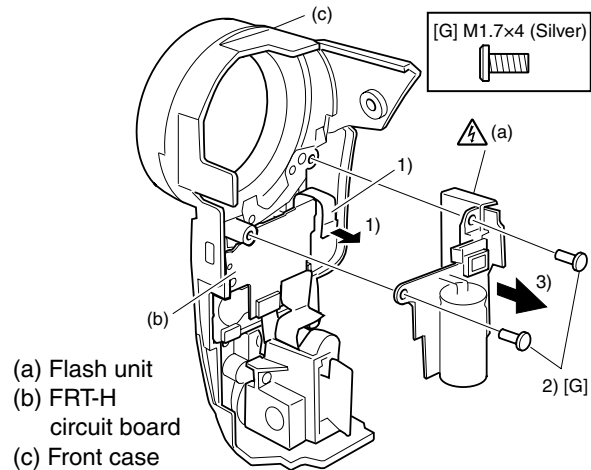


Fig. 5-3-20

**(21) AVJ-H/M/L Circuit Board**

- 1) Remove the AVJ-H/M/L circuit board (a) from the FRT-H/M/L circuit board (b) in the direction of the arrow.
- 2) Remove the two screws [G].
- 3) Remove the ground plate (c) in the direction of the arrow.
- 4) Remove the AVJ-H/M/L circuit board from the jack holder (d) in the direction of the arrow.

**Caution during disassembly and reassembly:**

When assembling the AVJ-H/ML circuit board and ground plate, tab both onto the claws of jack holder.

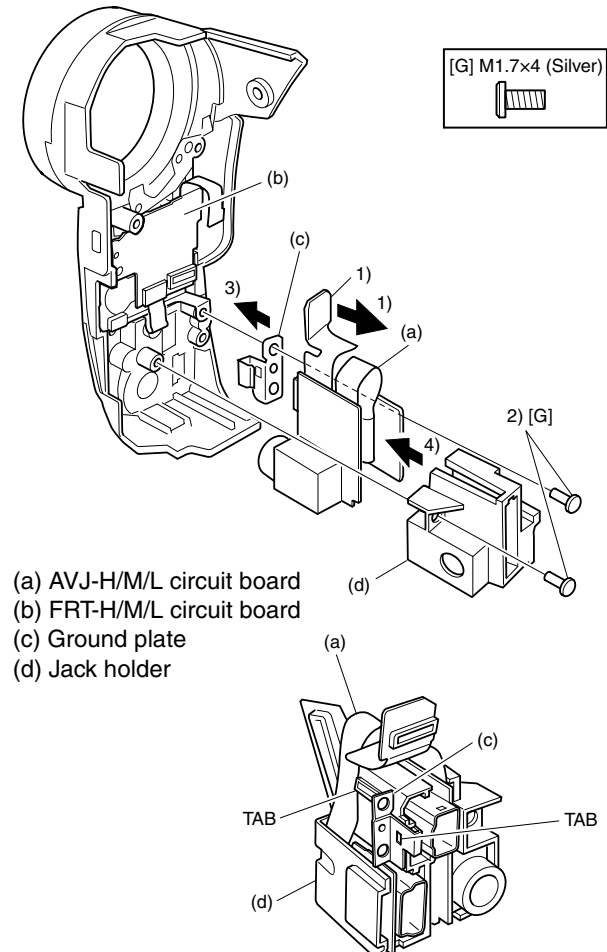


Fig. 5-3-21

## (22) FRT-H/M/L Circuit Board, Microphone and Front Case

- 1) Disconnect the microphone (b) from the FRT-H/M/L circuit board (a).
- 2) Remove the screw [G].
- 3) Remove the microphone in the direction of the arrow.

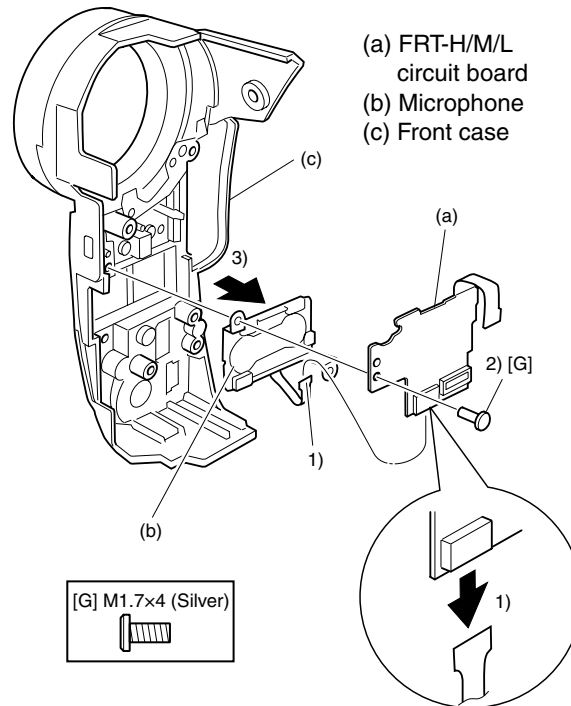
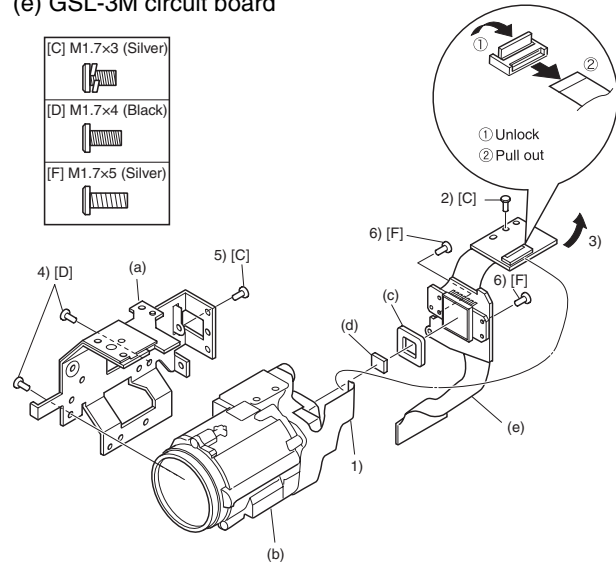
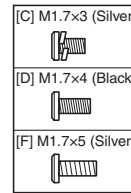


Fig. 5-3-22

### (23) Lens Frame, Lens Unit, Cushion and Crystal Filter [For DZ-HS303A/ GX3300A]

- 1) Disconnect the flat cable.
- 2) Remove the screw [C].
- 3) Turn the GSL-3M circuit board (e) up in the direction of the arrow.
- 4) Remove the two screws [D].
- 5) Remove the screw [C] and then remove the lens frame (a).
- 6) Remove the two screws [F] and then remove the cushion (c) and the crystal filter (d) from the lens unit (b).

- (a) Lens frame  
(b) Lens unit  
(c) Cushion  
(d) Crystal filter  
(e) GSL-3M circuit board



#### Note:

- 1) The lens unit and crystal filter are precision components: Take great care when handling them. Adherence of any dust, foreign object, fingerprint, etc. to them, or any scratches or impact, could cause a fault.
- 2) Never use metal tweezers to handle the crystal filter: Doing so could damage it.

#### Cautions during disassembly and reassembly:

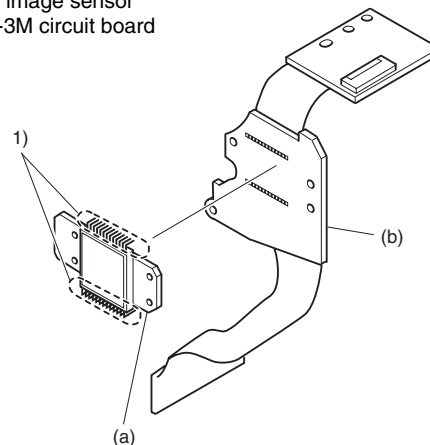
Take care with the orientation of crystal filter when assembling it: Incorrect orientation of the crystal filter could cause a fault.

Fig. 5-3-23

### (24) CCD Image Sensor and GSL-3M Circuit Board [For DZ-HS303A/ GX3300A]

- 1) Unsolder the 26 points at the CCD image sensor (a) terminal on GSL-3M circuit board (b).

- (a) CCD image sensor  
(b) GSL-3M circuit board



#### Note:

The CCD image sensor is a precision component: Take great care when handling it. Adherence of any dust, foreign object, fingerprint, etc. to it, or any scratches or impact, could cause a fault.

Fig. 5-3-24

**(25) Lens Unit, Cushion and Crystal Filter [For DZ-GX3200A]**

- 1) Disconnect the flat cable.
- 2) Remove the screw [C].
- 3) Turn the GSL-2M circuit board (d) up in the direction of the arrow.
- 4) Remove the two screws [F].
- 5) Remove the two screws [D] and then remove the cushion (b) and the crystal filter (c) from the lens unit (a).

**Note:**

- 1) The lens unit and crystal filter are precision components: Take great care when handling them. Adherence of any dust, foreign object, fingerprint, etc. to them, or any scratches or impact, could cause a fault.
- 2) Never use metal tweezers to handle the crystal filter: Doing so could damage it.

**Cautions during disassembly and reassembly:**

Take care with the orientation of crystal filter when assembling it: Incorrect orientation of the crystal filter could cause a fault.

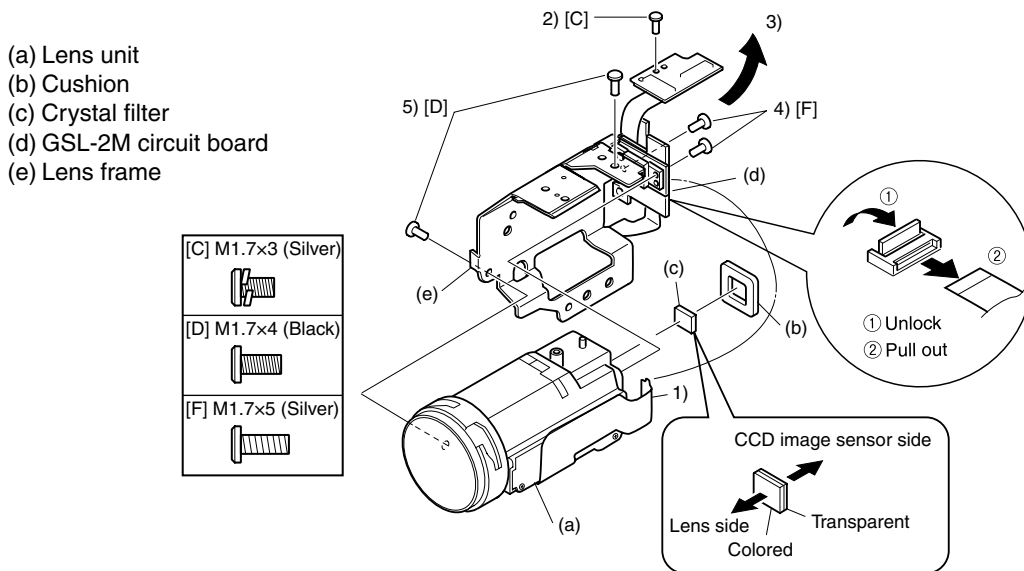


Fig. 5-3-25

**(26) CCD Image Sensor and GSL-2M Circuit Board [For DZ-GX3200A]**

- 1) Unsolder the 14 points at the CCD image sensor (a) terminal on GSL-2M circuit board (b).

**Note:**

The CCD image sensor is a precision component: Take great care when handling it. Adherence of any dust, foreign object, fingerprint, etc. to it, or any scratches or impact, could cause a fault.

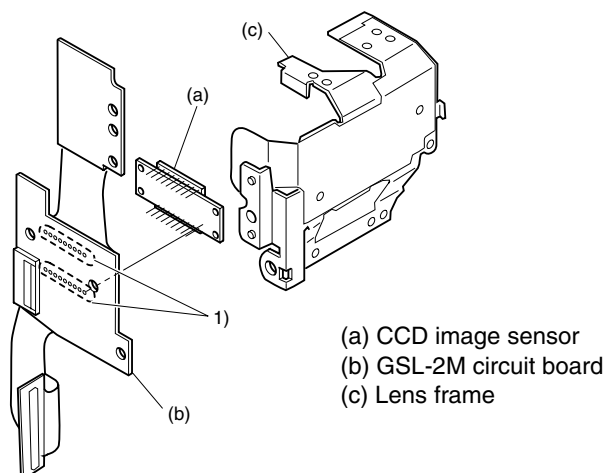


Fig. 5-3-26

## (27) Lens Frame, Lens Unit, Cushion and Crystal Filter [For DZ-GX3100A]

- 1) Disconnect the flat cable.
- 2) Remove the screw [C].
- 3) Turn the GSL-1M circuit board (d) up in the direction of the arrow.
- 4) Remove the two screws [D] and then remove the lens frame (e).
- 5) Remove the two screws [F] and then remove the cushion (b) and the crystal filter (c) from the lens unit (a).

### Note:

- 1) The lens unit and crystal filter are precision components: Take great care when handling them. Adherence of any dust, foreign object, fingerprint, etc. to them, or any scratches or impact, could cause a fault.
- 2) Never use metal tweezers to handle the crystal filter: Doing so could damage it.

### Cautions during disassembly and reassembly:

Take care with the orientation of crystal filter when assembling it: Incorrect orientation of the crystal filter could cause a fault.

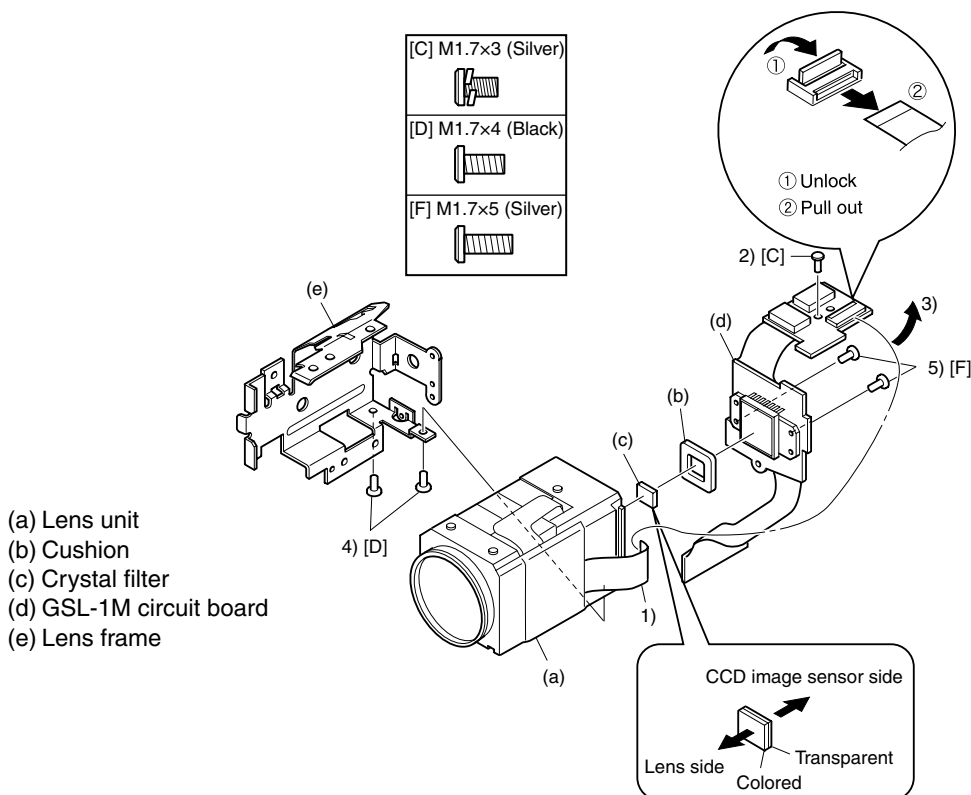


Fig. 5-3-27

**(28) CCD Image Sensor and GSL-1M Circuit Board [For DZ-GX3100A]**

- 1) Unsolder the 14 points at the CCD image sensor (a) terminal on GSL-1M circuit board (b).

**Note:**

The CCD image sensor is a precision component: Take great care when handling it. Adherence of any dust, foreign object, fingerprint, etc. to it, or any scratches or impact, could cause a fault.

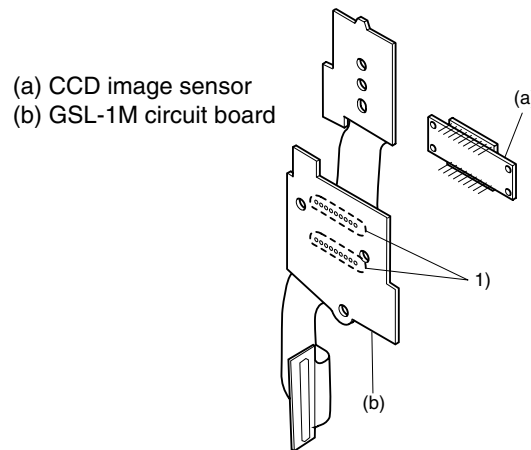


Fig. 5-3-28

**(29) Lens Frame, Lens Unit, Cushion and Crystal Filter [For DZ-HS300A/ BX37A/ BX35A]**

- 1) Disconnect the flat cable.
- 2) Remove the screw [C].
- 3) Turn the GSL-L circuit board (d) up in the direction of the arrow.
- 4) Remove the two screws [D] and then remove the lens frame (e).
- 5) Remove the two screws [F] and then remove the cushion (b) and the crystal filter (c) from the lens unit (a).

**Note:**

- 1) The lens unit and crystal filter are precision components: Take great care when handling them. Adherence of any dust, foreign object, fingerprint, etc. to them, or any scratches or impact, could cause a fault.
- 2) Never use metal tweezers to handle the crystal filter: Doing so could damage it.

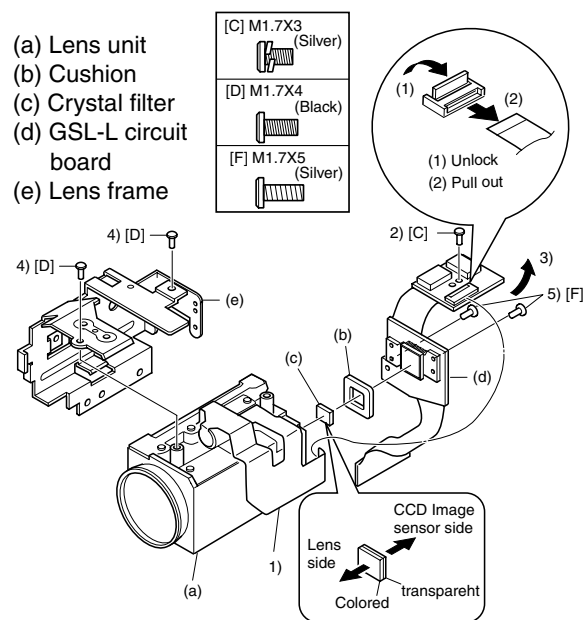


Fig. 5-3-29

**Cautions during disassembly and reassembly:**

Take care with the orientation of crystal filter when assembling it: Incorrect orientation of the crystal filter could cause a fault.

### (30) CCD Image Sensor and GSL-L Circuit Board [For DZ-HS300A/ BX37A/ BX35A]

- 1) Unsolder the 14 points at the CCD image sensor (a) terminal on GSL-L circuit board (b).

**Note:**

The CCD image sensor is a precision component:  
Take great care when handling it.  
Adherence of any dust, foreign object,  
fingerprint, etc. to it, or any scratches or  
impact, could cause a fault.

- (a) CCD image sensor  
(b) GSL-L circuit board

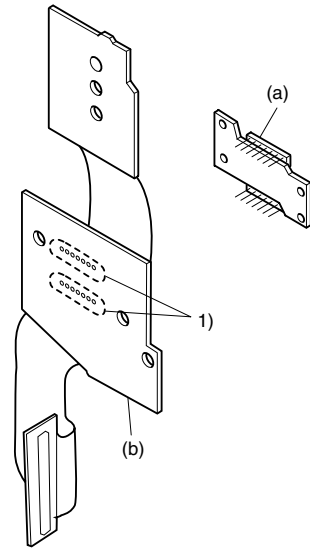


Fig. 5-3-30

## 5-4 EEPROM Data Backup and Write

Perform this work whenever you replace the MAN circuit board on which the EEPROM is mounted. Create a backup file of the data in EEPROM to be replaced in a PC, and write the backup file to new EEPROM. Some adjustment items that are performed after replacement can be omitted. Refer to “6-3-2 List of Adjustments Needed After Replacing Major Components” for adjustment items that can be omitted.

### Information:

It may be impossible to back up the data in EEPROM to be replaced, depending on the status of fault. In such a case, replace the MAN circuit board, and then perform “6-4-1 Initial Data Write”.

### (1) Preparations

- 1) Open the LCD monitor. Insert a fine-tipped flat-bladed screwdriver into the groove in adjustment cover, and remove the cover from L case in the direction of the arrow. Be very careful not to scratch the cover or L case with screwdriver.
- 2) Connect the DVD video camera/recorder, jig/tool and power supply as shown in Fig. 5-4-1. Refer to “6-1-2 List of Jigs and Tools used when Creating Reference Data” for details on jig/tool and power supply in the figure.
- 3) Copy the adjustment software to HDD of PC. Refer to “6-1-6 Copying or Deleting Adjustment Software” for copying.
- 4) Start the adjustment software in order to display the adjustment menu screen on PC display. Refer to “6-2-5 Starting and Terminating Adjustment Software” for how to start the software.

### Caution

It is very dangerous to perform any work with the DVD video camera/recorder disassembled, since the DVD video camera/recorder has a laser-emitting block and high-voltage circuits. Do not remove any parts other than the adjustment cover.

**Note:**

Always connect the Halcyon connector before connecting the DC power cord to the DVD video camera/recorder. Connecting the Halcyon connector after powering the DVD video camera/recorder could cause a fault.

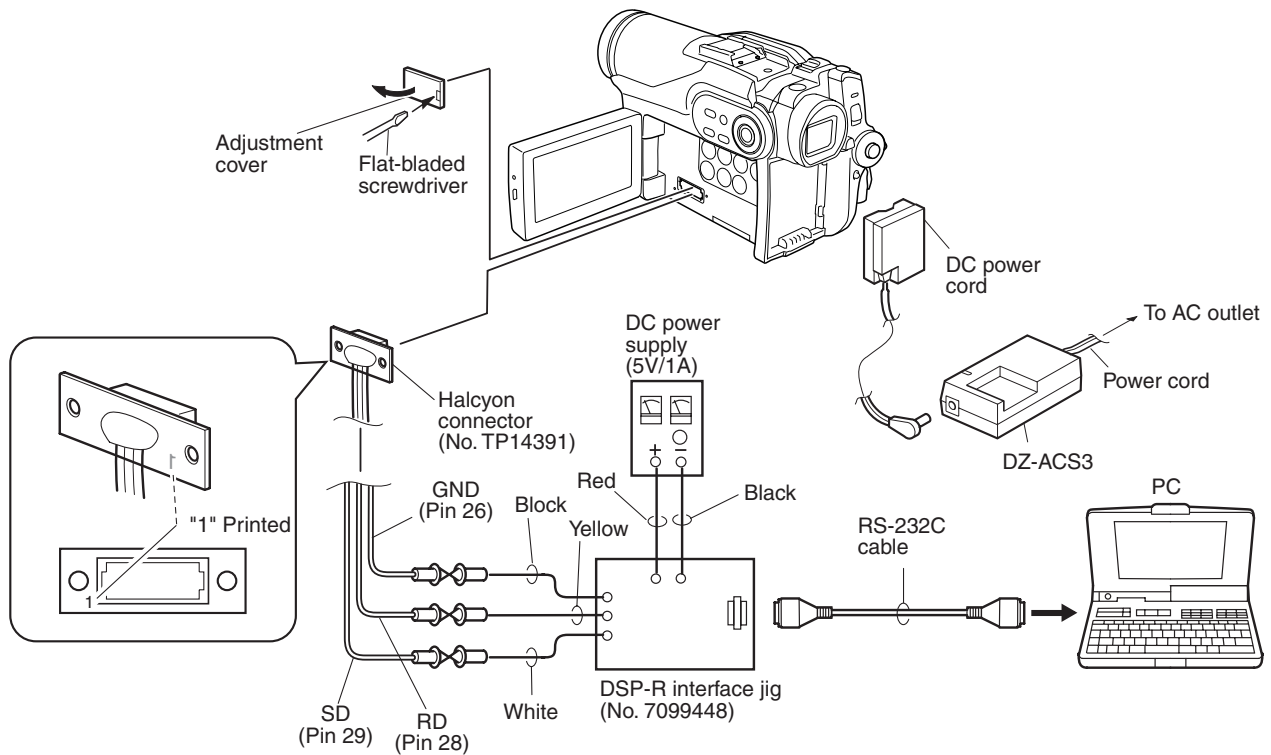
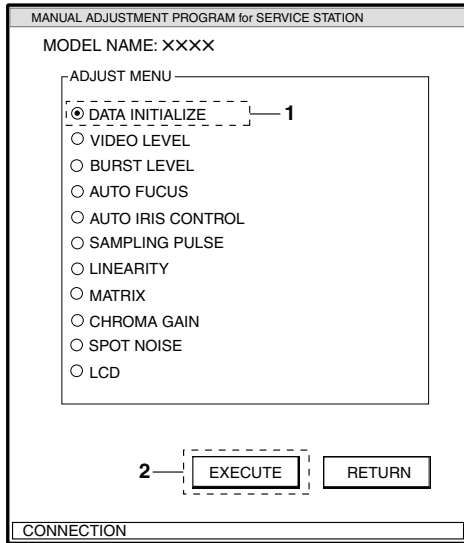


Fig. 5-4-1 Connections when creating backup file of EEPROM data and writing

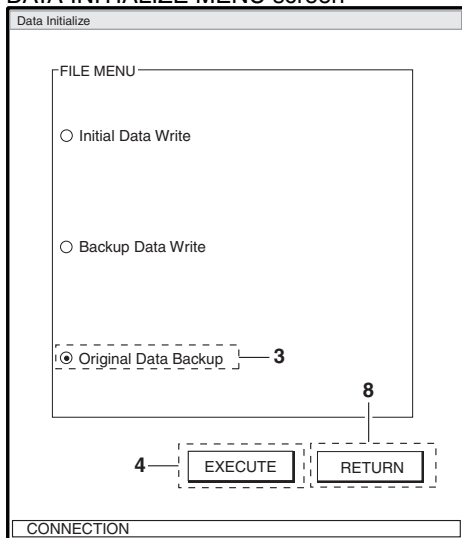
## 5-4-1 Backup Method

ADJUST MENU screen



- 1) Choose DATA INITIALIZE .
- 2) Click the EXECUTE button.

DATA INITIALIZE MENU screen



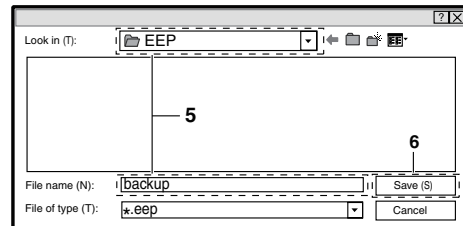
- 3) Choose Original Data Backup.

**Note:**

Do not choose “Initial Data Write” on the DATA INITIALIZE MENU.  
Refer to “6-4-1 Initial Data Write” for “Initial Data Write”.

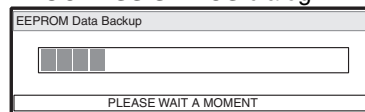
- 4) Click the EXECUTE button

BACKUP FILE SELECT screen

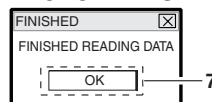


- 5) Select or set the names of folder and file in which the data is stored.  
This section refers to the folder and file as “EEP” and “backup.eep” for explanation:  
Freely select and set easy-to-understand names.
- 6) Click the SAVE button to start backup.  
The progress status can be confirmed using the PROGRESS STATUS dialog.

PROGRESS STATUS dialog



BACKUP FINISHED dialog



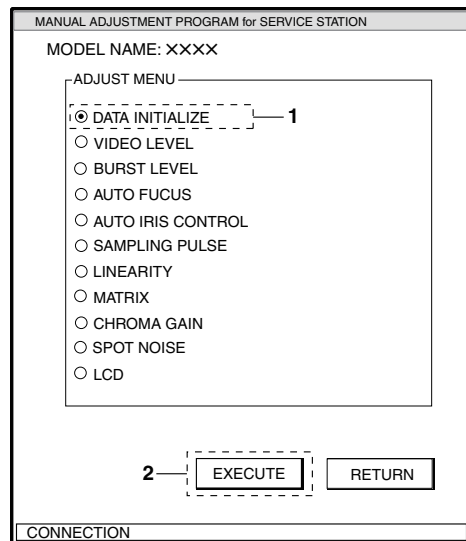
- 7) Click the OK button in dialog to restore the DATA INITIALIZE MENU screen.
- 8) Then click the RETURN buttons on each menu screen to restore the MODEL SELECT screen, and click the EXIT button on MODEL SELECT screen to exit the adjustment program.
- 9) Disconnect the DVD video camera/recorder, jig/tool and power supply, and then replace the MAN circuit board.

## 5-4-2 Write Method

### Restrictions:

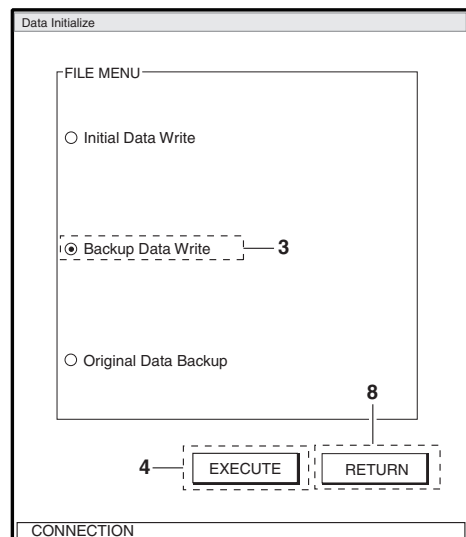
Never write data of any other product.  
The EEPROM data includes adjustment values, etc. that are peculiar to that product:  
It is different for each product even if the model is the same.  
If you write the data of another product by mistake, rewrite the correct data.

ADJUST MENU screen



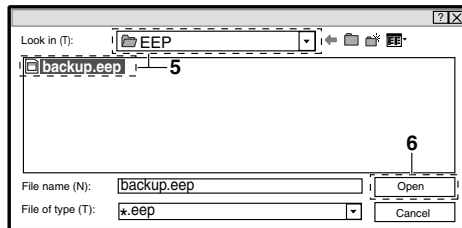
- 1) Choose DATA INITIALIZE.
- 2) Click the EXECUTE button.

DATA INITIALIZE MENU screen



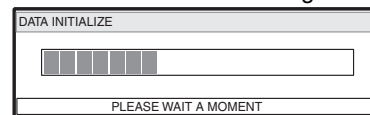
- 3) Choose Backup Data Write.
- 4) Click the EXECUTE button on DATA INITIALIZE MENU screen to proceed with the WRITE FILE SELECT screen.

WRITE FILE SELECT screen

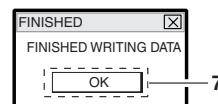


- 5) Select the folder and file in which the data has previously been backed up.  
This section refers to the folder and file as “EEP” and “backup.eep” for explanation.
- 6) Click the OPEN button to start writing.  
The progress status can be confirmed using the PROGRESS STATUS dialog.

PROGRESS STATUS dialog



INITIALIZATION FINISHED dialog



- 7) Click the OK button in dialog to restore the DATA INITIALIZE MENU screen.
- 8) Click the RETURN button on DATA INITIALIZE MENU screen to restore the ADJUST MENU screen, and then perform adjustment according to “6-3-2 List of Adjustments Needed After Replacing Major Components”.

## 6-1 Creating Reference Data

The reference data is necessary for adjustment: The adjustment program will not operate normally without it. Before adjustment, be sure to create the reference data, using the same model (with normal camera block) as the one to be adjusted.

The reference data is used to reduce the difference between environments of servicing site and factory (color temperature of light box, etc.). Using the reference data will increase adjustment accuracy.

### 6-1-1 Checking Reference Data

Before starting adjustment, check whether it will be necessary to create the reference data or not, referring to the flowchart below:

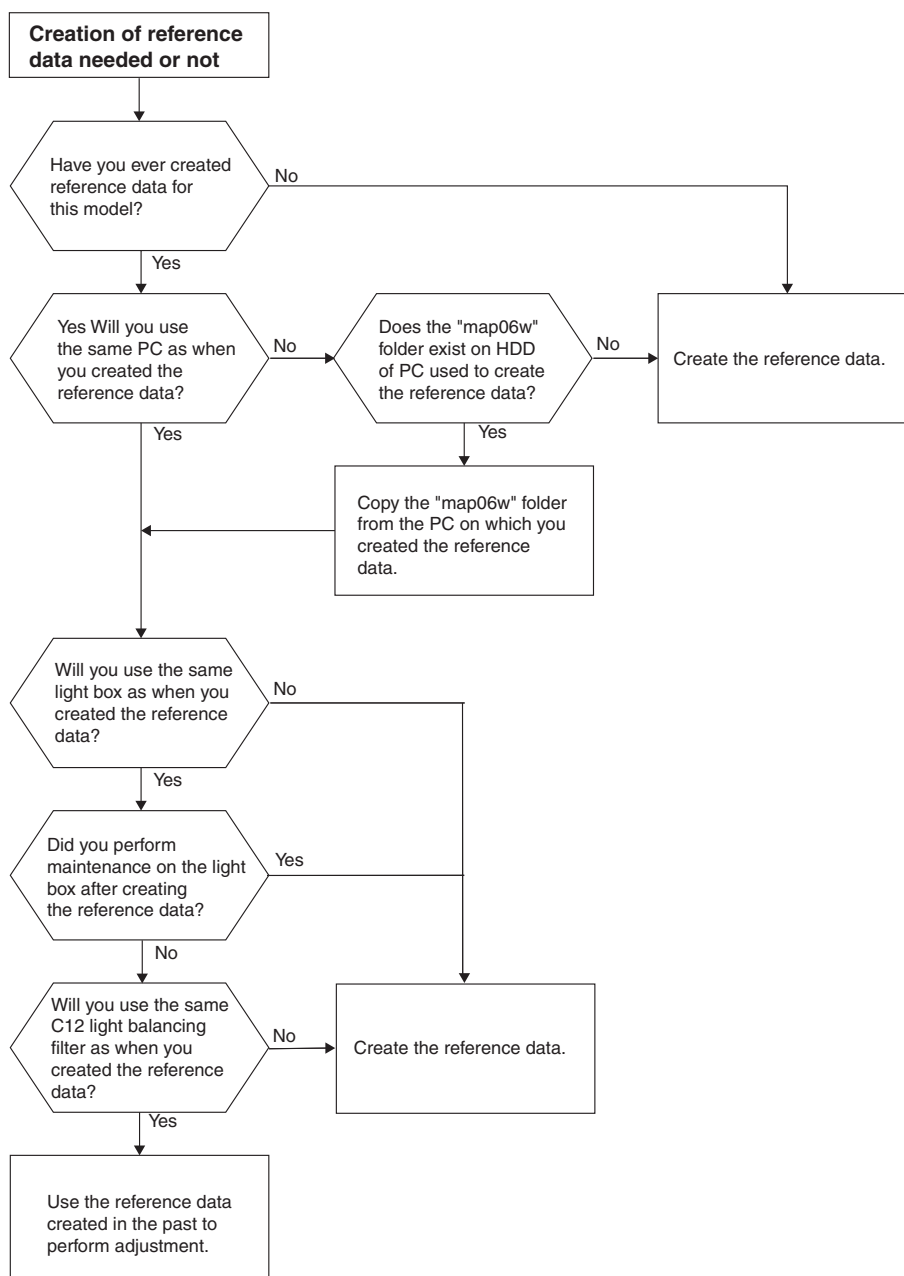


Fig. 6-1-1 Reference Data Check Flowchart

**Information:**

The reference data is usually created once for each model because it is recorded on hard disk drive (HDD) of PC with the adjustment software. However, creating reference data again is necessary in the following cases:

- a) When performing adjustment using a light box that is different from that used when the reference data was created.
- b) When performing maintenance of the light box used when creating the reference data (replacing fluorescent light, etc.).
- c) When performing adjustment using a C12 light balancing filter that is different from that used when the reference data was created.
- d) When deleting the folder containing the adjustment software from HDD.

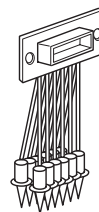


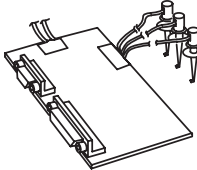
**Restrictions:**

If the same model with normal camera block as the one to be adjusted is not available, the reference data can be created by the following procedure. However, reference data created this way has been prepared at the factory, assuming the environment of service workplace, and may not be suitable for all service workplaces. Therefore, it is recommended that you create reference data using the same model with normal camera block as that to be adjusted.

- 1) Copy the adjustment software on HDD, referring to “6-1-6 Copying or Deleting Adjustment Software”.
- 2) Start up Explorer and open the refdata folder in map06w folder.
- 3) Refer to the following table to check the reference data file name of the model to be adjusted.
- 4) Copy the file with the same name as the reference data file name checked in step 3) in refdata folder to map06w folder.

Model	Name of reference data file
DZ-HS303A	gx3300.dat
DZ-HS300A	bx35.dat

## 6-1-2 List of Jigs and Tools used when Creating Reference Data

<b>NEW</b> Adjustment Software Note: Download from the Intranet.		Halcyon connector Parts No. TP14391	
Personal computer (PC) Computer on which any of the following OS operates and which has a RS-232C terminal <sup>(*)1</sup> OS: Windows 95/98/98 Second Edition/Me/2000 Professional/XP/NT4.0			
C12 light balancing filter (Diameter: 46mm) Parts No. 7099369		DSP-R jig Parts No. 7099448	
RS-232C cable (9-pin or 25-pin straight type) [Generally available] Check the number of pins of RS-232C terminals on PC and DSP-R jig and the shapes (male/female) before purchasing.	AV input/output or output cable [Accessory: Parts No. EW12525]	DZ-ACS3 AC adapter/charger [Accessory] <sup>(*)2</sup>	
Power cable for AC adapter/charger [Accessory] <sup>(*)2</sup>	DC power cord [Accessory: Parts No. EV11011]		

\*1: The adjustment software used on DVD video camera/recorder is exclusively for Windows 95/98/98 Second Edition/Me/2000 Professional/XP/NT4.0: The program cannot be run on MS-DOS.

\*2: The part numbers of AC adapter/charger and power cable are different depending on the destination: Refer to the "Replacement Parts List" for the part numbers.

### 6-1-3 Power Supply and Materials for Creating Reference Data

- 1) DVD video camera/recorder (for creating reference data) that is the same model as the one to be adjusted and whose camera block is operating normally.

**Note:**

It is recommended that you use a brand-new unit of the same model when creating the reference data. If such a unit is not available, use the same model of the DVD video camera/recorder that is received from customer for repairing fault in disc drive that is other than in the camera block, and one where there is no problem in recording of camera image and the zoom is operating normally.

- 2) 3100 K light box (maintenance is necessary)
- 3) Color monitor (color TV with AV input jacks)
- 4) DC power supply for DSP-R jig (5 V/1 A)

### 6-1-4 Connections when Creating Reference Data

Connect the DVD video camera/recorder, jigs and test equipment as shown in Fig. 6-1-2.

**Caution**

It is very dangerous to perform any work with the DVD video camera/recorder disassembled, since the DVD video camera/recorder has a laser-emitting block and high-voltage circuits: Do not remove any parts other than the adjustment cover.

#### (1) Setting of light box

- 1) Use a light box whose color temperature is controlled with no flickering: Using an inappropriate light box will interference with work.

#### (2) Setting and disassembly of DVD video camera/recorder

- 1) Open the LCD monitor and insert a fine-tipped flat-bladed screwdriver into the groove in adjustment cover, and remove the cover from L case in the direction of the arrow: Be very careful not to scratch the cover or L case with screwdriver.
- 2) Set the light box 30-50 cm away from DVD video camera/recorder, and eliminate any effects from surrounding light, except where such designation is given.
- 3) Use a small tripod to fix the DVD video camera/recorder, making certain it does not move during creation of reference data.
- 4) Set the lens surface of DVD video camera/recorder in parallel with the surface of light box as far as possible, and adjust the focus.

**Note:**

Always connect the Halcyon connector before connecting the DC power cord to the DVD video camera/recorder : Connecting the Halcyon connector after powering the DVD video camera/recorder could cause a fault.

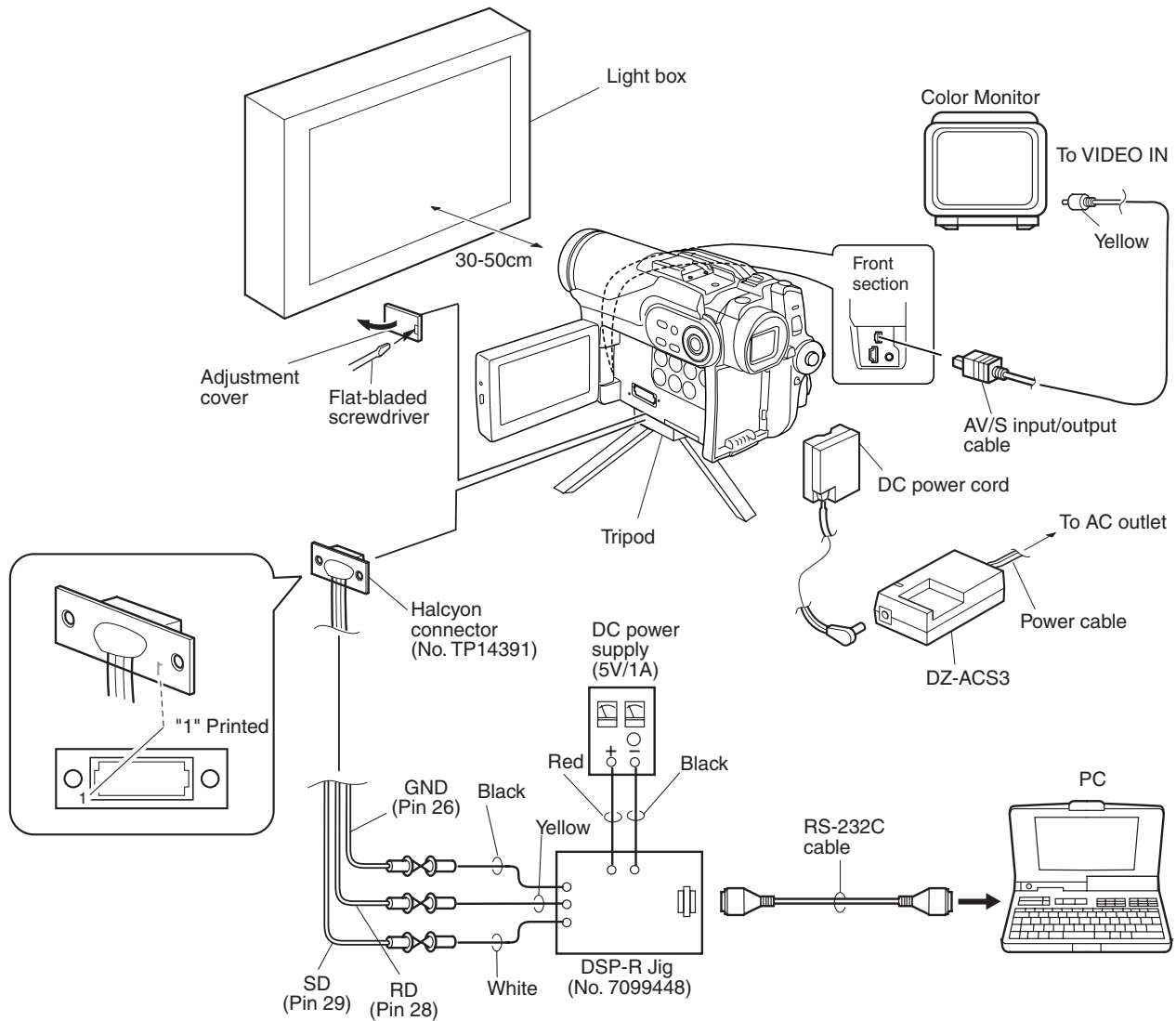


Fig. 6-1-2 Connections when Creating Reference Data

## 6-1-5 Settings when Creating Reference Data

When the connections for creating reference data are complete, set the DVD video camera/recorder and test equipment as follows:




- 1) Make sure that no disc or card is inserted: Neither is necessary when creating reference data.
- 2) Set the power switch to “HDD” : After that operate the DVD video camera/recorder while watching the LCD monitor screen.
- 3) Press the MENU button to display the camera function setup screen.
- 4) Use the **◀◀/▶▶/◀◀/▶▶** buttons to choose “Initial Setup”, and then press the **▶/||** button.
- 5) Use the **◀◀/▶▶/◀◀/▶▶** buttons to choose “Reset”, and then press the **▶/||** button.
- 6) Use the **◀◀/▶▶/◀◀/▶▶** buttons to choose “YES”, and then press the **▶/||** button.
- 7) When reset is complete, use the above procedure to operate the **◀◀/▶▶/◀◀/▶▶** buttons and set 16:9 in the Recording Function Setup menu to “off”, set Demo Mode in the Initial Setup menu to “Off”: Forgetting to set it to “Off” will cause a problem during creation of reference data.
- 8) Press the MENU button to restore the normal display.

### Information:

The following table shows the menu status after the above settings:

The settings for HDD Protection and Date Setup are not shown in the table below, since they do not have any meaning when creating reference data.

Item	Setting
<b>Camera Functions Setup</b>	
Program AE	Auto
White Bal.	Auto
EIS	On
Dig. Zoom	40×/100× <sup>(*)1</sup>
MIC Filter	Off
Flash <sup>(*)2</sup>	Auto
<b>Recording Functions Setup</b>	
VIDEO Mode	FINE
Quality	FINE
16:9	Off
Input Source <sup>(*)3</sup>	CAMERA
Self Timer	Off
OSD Output	Off

Item	Setting
<b>LCD/EVF Setup</b>	
LCD Brightness	
EVF Brightness	
Color Level	
EVF Display	Auto
<b>Initial Setup</b>	
Beep	On
Power Save	Off
Record LED	On
Language	English
Demo Mode	Off

\*1: 40x will appear on DZ-HS303A; 100x, on DZ-HS300A.

\*2: DZ-HS303A only

\*3: DZ-HS303A only

## 6-1-6 Copying or Deleting Adjustment Software

**Information:**

The software for creating reference data is included in the adjustment software.

### (1) Copy

- 1) Start the PC.
- 2) Start Explorer and create a new folder in HDD of PC. The name “map06w” is recommended for the folder: If a folder with the same name exists, give the folder a similar name that is easily understandable.

**Note:**

Be sure to manage the adjustment software for Windows and MS-DOS in different folders: Managing them in the same folder will interfere with adjustment.

- 3) Decompress the downloaded adjustment software. The adjustment software is usually compressed in the LZH or ZIP format.
- 4) Copy all folders and files created after decompression to the map06w folder.

### (2) Deleting

If it is necessary to delete the adjustment software from hard disk drive (HDD) of PC, delete the

## 6-1-7 Starting and Terminating Reference Data Creation Software

Make sure that the connections are correct, the power switch on DVD video camera/recorder is set to “HDD”, and the DC power supply for DSP-R jig is turned on: The reference data creation software will not start unless the connections for creating reference data are correct, and the DVD video camera/recorder or DSP-R jig is powered.

The reference data creation software will not start unless the connections for creating reference data are correct and the DVD video camera/recorder or DSP-R jig is powered. Also, setting the power switch to “DVD” could cause a problem.

For subsequent operation, operate the PC mouse while watching the PC monitor screen.

**Information:**

- 1) Display ×××× on subsequent PC screen shows the model name.
- 2) The numbers on PC screens show the operational procedure.

### (1) Start

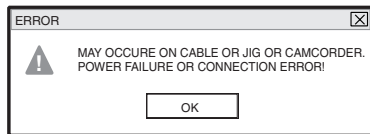
- 1) Start the PC. If the PC has already started, terminate all other applications.
- 2) Start Explorer, and double-click the “SETUPforMAP2006W.EXE” file in map06w folder to start the software.
- 3) Once the software has started, the COMMUNICATION PORT SETTING screen will appear.

- 4) Choose the communication port to which the RS-232C cable is connected, and then choose the radio button of corresponding port on COMMUNICATION PORT SETTING screen.
- 5) Click the OK button on the COMMUNICATION PORT SETTING screen, and then proceed with the MODEL SELECT screen.

**Note:**

If the following dialogs appear, perform the troubleshooting below:

**POWER OR CONNECTION ERROR dialog**



**COM PORT ERROR dialog**



When the power or connection error dialog appears:

A connection is incorrect or power is not turned on. Make sure that all connections are correct and that power is supplied to the reference data creating device or DSP-R interface jig.

Clicking the OK button will finish the software:

After solving the problem, restart the software.

When the communication port error dialog appears:

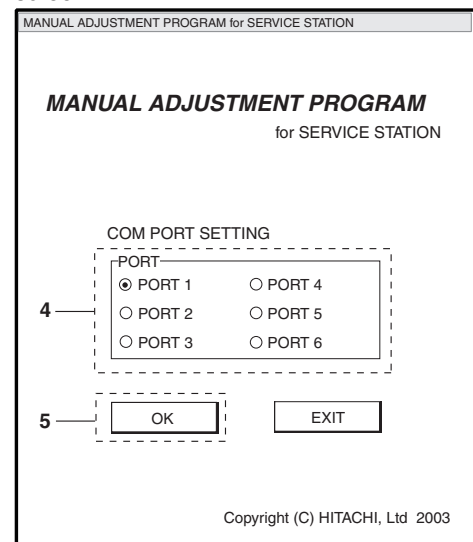
There was a mistake in selecting communication port.

Check the communication port.

Clicking the OK button will finish the software:

Select the communication port again after restart.

**COMMUNICATION PORT SETTING screen**



- 6) Choose the radio button of corresponding model name in MODEL SELECT screen.

Name of model to be adjusted	Corresponding model name on MODEL SELECT screen
DZ-HS303A	DZ-HS303
DZ-HS300A	DZ-HS300

**Information:**

The symbols in parentheses ( ) in the above model names show the destinations and are displayed only on packing box.

Refer to "2-5 Differences in Rating Labels and Difference in Function" when checking the body of DVD video camera/recorder to judge its destination.

- 7) Click the ENTER button in MODEL SELECT screen, and then proceed with the SETUP MENU screen. Refer to next item for subsequent operations. If there is an error in model selection, the FILE HANDLE ERROR dialog will appear. Click the OK button, and then choose the correct model.

**Information:**

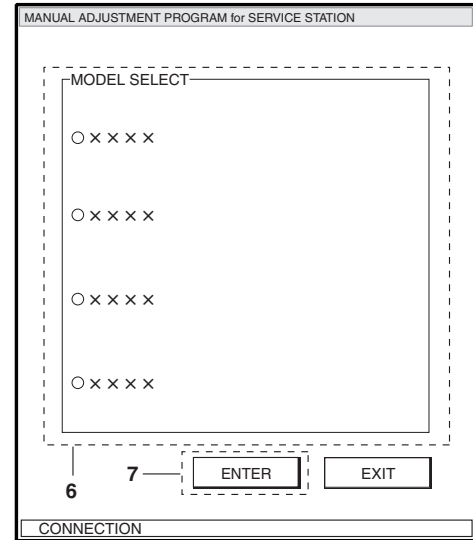
The setup menu screen will be different depending on the model.

"Matrix" is not displayed on DZ-HS303A, since it is not necessary.

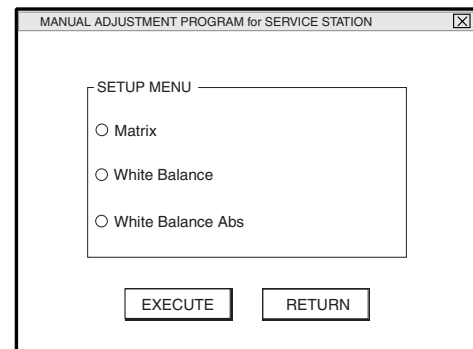
**Note:**

If the FILE HANDLE ERROR dialog appears when the correct model has been chosen, obtain (download) the newest adjustment software, and then start over again. If the FILE HANDLE ERROR dialog still appears with the newest adjustment software, check with the factory.

**MODEL SELECT screen.**



**SETUP MENU screen.**



**FILE HANDLE ERROR dialog**



## (2) Termination

- 1) Click the RETURN button on MENU screen of program to return to the MODEL SELECT screen.
- 2) Click the EXIT button on the MODEL SELECT screen.

### Information:

If the PC does not accept any operation during work, or the reference data creating software does not work, perform the following procedure:

- 1) Set the power switch of reference data creating device to “OFF”.
- 2) Turn off the DC power supply of DSP-R jig.
- 3) Simultaneously press the Ctrl, Alt and Delete keys on PC keyboard to restart the PC.
- 4) After the PC restarts, set the power switch of reference data creating device to “HDD” and turn on the DC power supply of DSP-R jig again.
- 5) Restart the reference data creating software.

## 6-1-8 Creating Reference Data

Start the setup software.

For subsequent operation, operate the PC mouse while watching the PC monitor screen.

### Information:

It takes approx. 20 minutes to create reference data.

The following shows the times required for each item:

Matrix: Approx. 10 minutes

White Balance: Approx. 10 minutes

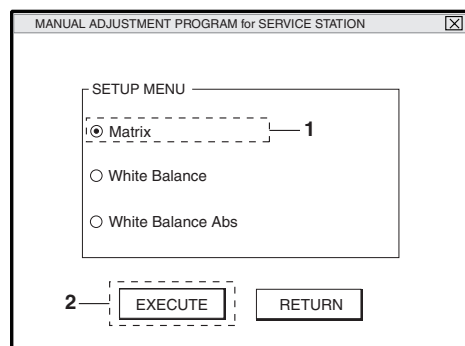
White Balance Abs: Approx. 30 seconds

### Preparation:

- 1) Point at light box without chart, filling the screen.
- 2) Prepare the C12 light balancing filter (step-up rings): Attach it during setup.

### Procedure:

SETUP MENU screen.

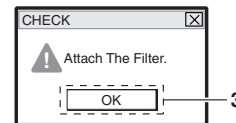


### Information:

“Matrix” is not displayed on DZ-HS303A: It is not necessary: Start adjustment from step 6).

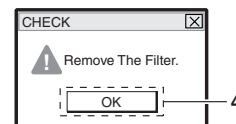
- 1) Choose MATRIX.
- 2) Click the EXECUTE button.

ATTACH THE FILTER dialog



- 3) The ATTACH THE FILTER dialog will appear during setup. Attach the C12 light balancing filter over the lens of DVD video camera/recorder, and then click the OK button.

REMOVE THE FILTER dialog

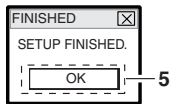


- 4) The REMOVE THE FILTER dialog will appear during setup.

Remove the C12 light balancing filter from the lens of DVD video camera/recorder, and then click the OK button.

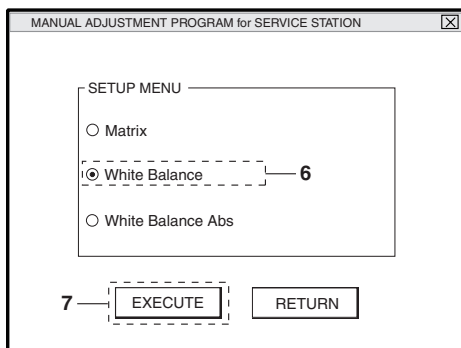
After that, the ATTACH THE FILTER dialog and REMOVE THE FILTER dialog may occasionally appear: Reattach the C12 light balancing filter and remove it each time.

SETUP FINISHED dialog



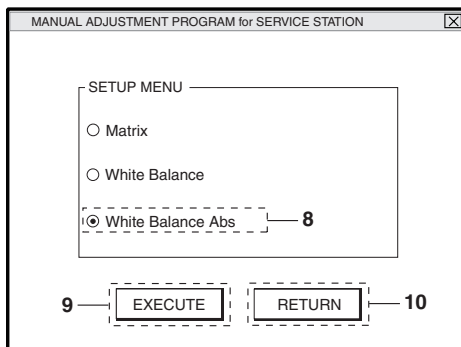
- 5) When setup is complete, the SETUP FINISHED dialog will appear. Click the OK button to restore the SETUP MENU screen. When setup is complete with the C12 light balancing filter attached, remove the C12 light balancing filter.

SETUP MENU screen.



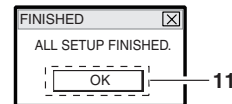
- 6) Choose WHITE BALANCE on the SETUP MENU screen.  
7) Repeat steps 2)-5).

SETUP MENU screen.



- 8) Choose WHITE BALANCE ABS.  
9) Repeat steps 2)-5).  
10) Click the RETURN button.

ALL SETUP FINISH dialog



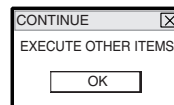
- 11) Click the OK button to complete the creation of reference data.

**Note:**

Neither Matrix, White Balance nor White Balance Abs in SETUP MENU can be executed independently. Be sure to execute all items at the same time.

If you click the RETURN button on the SETUP MENU screen with an unfinished item, the EXECUTE OTHER ITEMS dialog will appear. Click the OK button in EXECUTE OTHER ITEMS dialog, and then execute the unfinished items.

EXECUTE OTHER ITEMS dialog



## 6-2 Setups for Adjustment

### Restrictions:

Be sure to perform "6-1-1 Checking Reference Data" in advance.

No adjustment can be done without reference data.

### 6-2-1 List of Jigs and Tools for Adjustment

Same as when creating reference data: Refer to "6-1-2 List of jigs and tools when creating reference data" for details.

- 1) Personal computer
- 2) Adjustment software
- 3) Halcyon connector
- 4) C12 light balance filter
- 5) DSP-R Jig
- 6) RS-232C cable
- 7) AV/S input/output cable
- 8) DZ-ACS3
- 9) Power cable
- 10) DC power cord

### 6-2-2 Test Equipment, Power Supply and Charts for Adjustment

- 1) Color bar chart
- 2) 3100 K light box (maintenance is necessary)
- 3) Backfocus chart
- 4) Color monitor (color TV with AV input jacks)
- 5) Oscilloscope
- 6) Vectorscope
- 7) Digital voltmeter
- 8) Frequency counter
- 9) DC power supply for DSP-R jig (5 V/1 A)

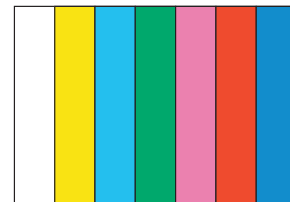


Fig. 6-2-1 Color Bar Chart

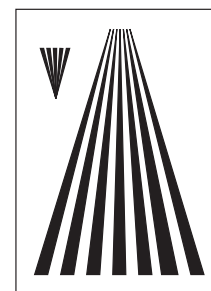


Fig. 6-2-2 Backfocus Chart

### Information:

It is recommended that you use a vectorscope when performing the chroma gain adjustment.

You can use an oscilloscope instead: Note, however, that the adjustment accuracy will be lower.

### 6-2-3 Connections for Adjustment

Connect the DVD video camera/recorder, jigs and test equipment as shown in the Fig. 6-2-3.

### Caution

It is very dangerous to perform any work with the DVD video camera/recorder disassembled, since the DVD video camera/recorder has a laser-emitting block and high-voltage circuits: Do not remove any parts other than the adjustment cover.

**(1) Setting of light box**

- 1) Use the same light box as when the reference data was created: Its color temperature and illuminance are strictly controlled and free from flickering. If the setting of color box is not appropriate, the adjustment software may not operate normally.

**(2) Setting and disassembly of DVD video camera/recorder**

- 1) Open the LCD monitor and insert a fine-tipped flat-bladed screwdriver into the groove in adjustment cover, and remove the cover from L case in the direction of the arrow: Be very careful not to scratch the cover or L case with screwdriver.
- 2) Set the light box 30-50 cm away from DVD video camera/recorder, and eliminate any effects from surrounding light, except where such designation is given.
- 3) Set the lens surface of DVD video camera/recorder in parallel with the surface of light box as far as possible, and adjust the focus.
- 4) Use a small tripod to fix the DVD video camera/recorder, making certain it does not move during adjustment.
- 5) Be sure to connect the video output of DVD video camera/recorder to the video input jack of color monitor, which is usually terminated by 75 ohm: If the video output is not terminated by 75 ohm, the video output value cannot be measured correctly.

**Note:**

Always connect the Halcyon connector before connecting the DC power cord to the DVD video camera/recorder: Connecting the Halcyon connector after powering the DVD video camera/recorder could cause a fault.

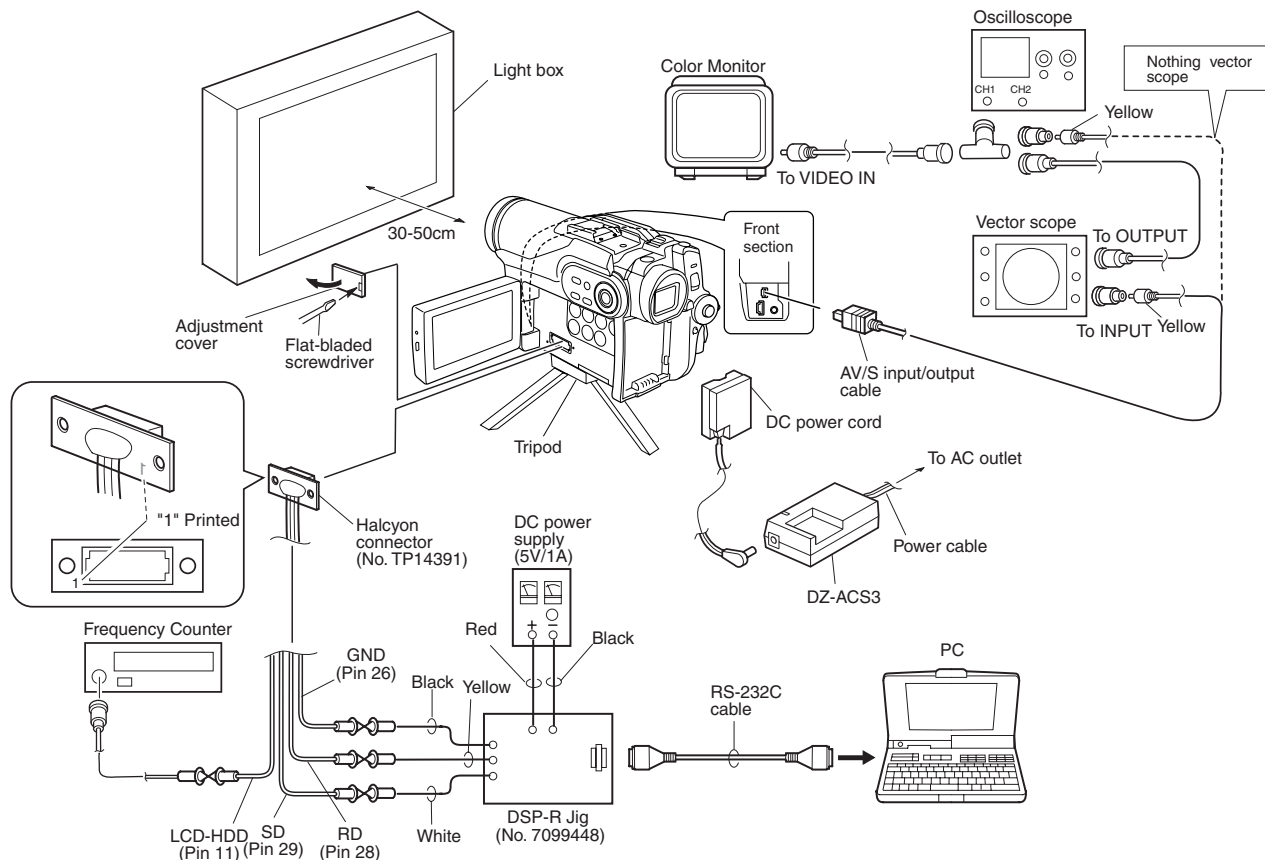


Fig. 6-2-3 Connections for Adjustment

## 6-2-4 Settings for Adjustment

When the connections for adjustment are complete, set the DVD video camera/recorder and test equipment as follows:

### (1) Setting the DVD video camera/recorder

**Information:**

This item is the same as when creating reference data.

- 1) Make sure that no disc or card is inserted: Neither is necessary when adjustment.
- 2) Set the power switch to “HDD” because “DVD” could cause a problem: After that operate the DVD video camera/recorder while watching the LCD monitor screen.
- 3) Press the MENU button to display the camera function setup screen.
- 4) Use the ◀◀/▶▶/◀◀/▶▶ buttons to choose “Initial Setup”, and then press the ▶/|| button.
- 5) Use the ◀◀/▶▶/◀◀/▶▶ buttons to choose “Reset”, and then press the ▶/|| button.
- 6) Use the ◀◀/▶▶/◀◀/▶▶ buttons to choose “YES”, and then press the ▶/|| button.
- 7) When reset is complete, use the above procedure to operate the ◀◀/▶▶/◀◀/▶▶ buttons and set 16:9 in the Recording Function Setup manu to “off”, set Demo Mode in the Initial Setup menu to “Off”: Forgetting to set it to “Off” will cause a problem during adjustment.
- 8) Press the MENU button to restore the normal display.

**Information:**

The following table shows the menu status after the above settings:

The settings for HDD Protection and Date Setup are not shown in the table below, since they do not have any meaning when adjusting.

Item	Setting	Item	Setting
<b>Camera Functions Setup</b>		<b>LCD/EVF Setup</b>	
Program AE	Auto	LCD Brightness	◀■■■■■■■■■■▶
White Bal.	Auto	EVF Brightness	◀■■■■■■■■■■▶
EIS	On	Color Level	◀■■■■■■■■■■▶
Dig. Zoom	40×/100× <sup>(*)1</sup>	EVF Display	Auto
MIC Filter	Off	<b>Initial Setup</b>	
Flash <sup>(*)2</sup>	Auto	Beep	On
<b>Recording Functions Setup</b>		Power Save	Off
VIDEO Mode	FINE	Record LED	On
Quality	FINE	Language	English
16:9	Off	Demo Mode	Off
Input Source <sup>(*)3</sup>	CAMERA		
Self Timer	Off		
OSD Output	Off		

\*1: 40x will appear on DZ-HS303A; 100x, on DZ-HS300A.

\*2: DZ-HS303A only

\*3: DZ-HS303A only

## (2) Setting test equipment

The names of switches, etc. of test equipment may vary depending on the manufacturer and model. Some switches in addition to those shown below may have to be set: See the instruction manual of test equipment for details.

### 1) Oscilloscope

- a) Probe: 10:1
- b) TIME/DIV: 10 or 20  $\mu$ s (except where some other designation is given)
- c) VOLTS/DIV: Change depending on the measurement object
- d) TRIGGER SOURCE: CH1 (except where some other designation is given)
- e) AC/DC/GND: AC

### 2) Vectorscope

- a) SATURATION: 75%

## 6-2-5 Starting and Terminating Adjustment Software

Make sure that the connections are correct, the power switch on DVD video camera/recorder is set to “HDD”, and the DC power supply for DSP-R jig is turned on. The adjustment software will not start unless the connections for adjustment are correct, and the DVD video camera/recorder or DSP-R jig is powered.

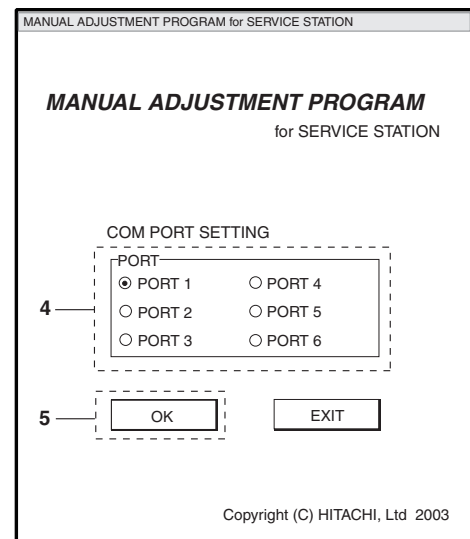
### Information:

- 1) Display ×××× on subsequent PC screen shows the model name.
- 2) The numbers on PC screens show the operational procedure.

### (1) Start

- 1) Start the PC. If the PC has already started, terminate all other applications.
- 2) Start Explorer, and double-click the “MAP2006W.EXE” file in map06w folder to start the adjustment software.
- 3) Once the adjustment software has started, the COMMUNICATION PORT SETTING screen will appear.
- 4) Check the communication port to which the RS-232C cable is connected, and then choose the radio button of corresponding port on COMMUNICATION PORT SETTING screen.
- 5) Click the OK button on the COMMUNICATION PORT SETTING screen, and then proceed with the MODEL SELECT screen.

### COMMUNICATION PORT SETTING screen



### Note:

If the dialogs on right appear, perform the following troubleshooting:

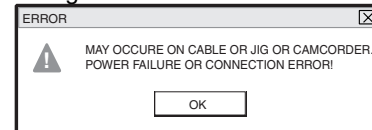
When the power or connection error dialog appears:

A connection is incorrect or power is not turned on. Make sure that all connections are correct and that power is supplied to the reference data creating device or DSP-R interface jig.

Clicking the OK button will finish the software:

After solving the problem, restart the software.

### POWER OR CONNECTION ERROR dialog



### COM PORT ERROR dialog



When the communication port error dialog appears:

There was a mistake in selecting communication port.

Check the communication port.

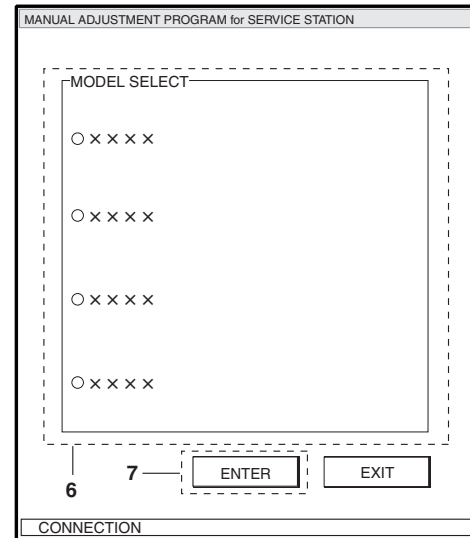
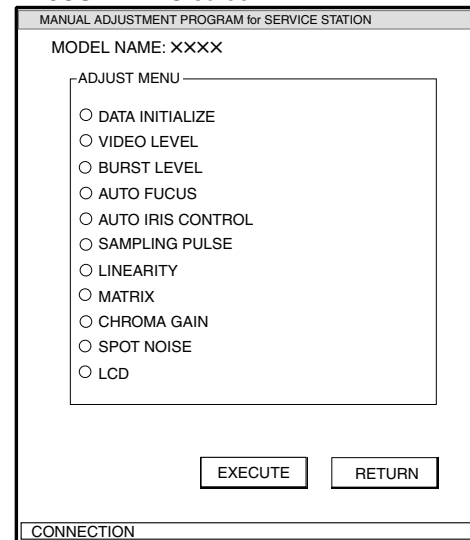
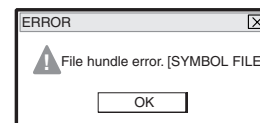
Clicking the OK button will finish the software:

Select the communication port again after restart.

**Information:**

When communications between the PC and DVD video camera/recorder are normal during adjustment, the word “CONNECTION” in status bar (bottom left) of each screen will flash.

- 6) Choose the radio button of corresponding model name in MODEL SELECT screen.
- 7) Click the ENTER button in MODEL SELECT screen, and then proceed with the ADJUST MENU screen. Start of the adjustment program is now complete. Refer to “6-4 Adjustment Procedure” for subsequent operations. If there is an error in model selection, the FILE HANDLE ERROR dialog will appear. Click the OK button, and then choose the correct model.

**MODEL SELECT screen.****ADJUST MENU screen.****FILE HANDLE ERROR dialog****Note:**

If the FILE HANDLE ERROR dialog appears when the correct model has been chosen, obtain (download) the newest adjustment software, and then start over again.

If the FILE HANDLE ERROR dialog still appears with the newest adjustment software, check with the factory.

## (2) Termination

- 1) Click the RETURN button on MENU screen of adjustment software to return to the MODEL SELECT screen.
- 2) Click the EXIT button on the MODEL SELECT screen.

### Information:

If the PC does not accept any operation during work, or the adjustment software does not work, perform the following procedure:

- 1) Set the power switch of DVD video camera/recorder to “OFF”.
- 2) Turn off the DC power supply of DSP-R jig.
- 3) Simultaneously press the Ctrl, Alt and Delete keys on PC keyboard to restart the PC.
- 4) After the PC restarts, set the power switch of DVD video camera/recorder to “HDD” and turn on the DC power supply of DSP-R jig again.
- 5) Restart the adjustment software.

## 6-3 List of Adjustment Items

### 6-3-1 Adjustment Software Hierarchy Diagram

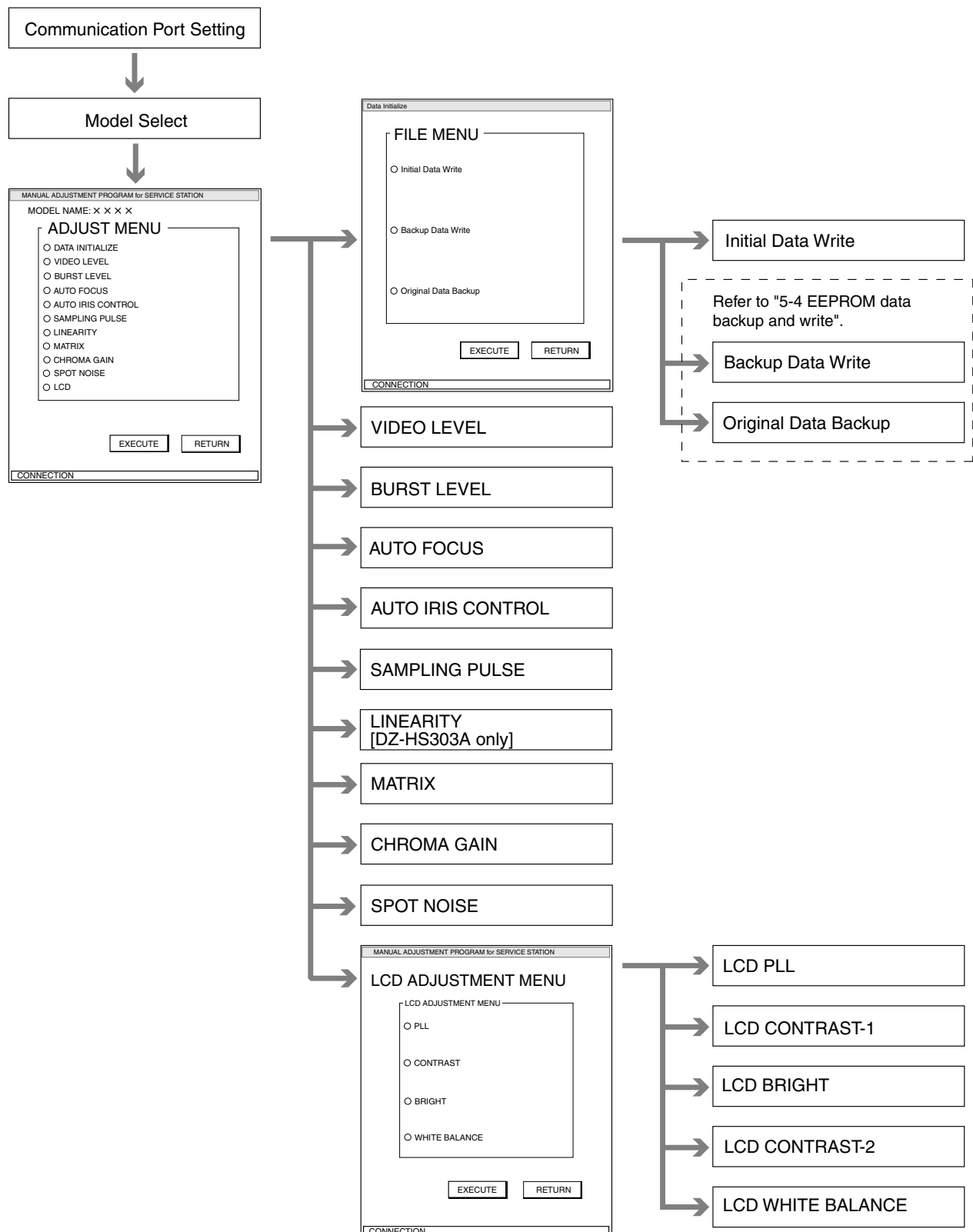


Fig. 6-3-1

## 6-3-2 List of Adjustments Needed After Replacing Major Components

Item	Major Components		
	MAN circuit board or IC2300 <sup>(*)1</sup> (EEPROM backup data already written)	MAN circuit board or IC2300 <sup>(*)1</sup> (EEPROM data backup disabled) <sup>(*)2</sup>	LCD unit
Initial Data Write		●	
Video Level	●	●	
Burst Level	●	●	
Autofocus		●	
Auto Iris Control	●	●	
Sampling Pulse	●	●	
Linearity <sup>(*)3</sup>	●	●	
Matrix		●	
Chroma Gain		●	
Spot Noise		●	
LCD PLL	●	●	●
LCD Contrast-1 <sup>(*)4</sup>	●	●	●
LCD Bright <sup>(*)4</sup>	●	●	●
LCD Contrast-2 <sup>(*)4</sup>	●	●	●
LCD White Balance	●	●	●

\*1: Be sure to perform “4-9-2 EEPROM data backup and write” before replacing the MAN circuit board.

\*2: “EEPROM data backup disabled” refers to when the backup of EEPROM data from the MAN circuit board to be replaced could not be properly executed due to some fault, such as the DVD video camera/recorder not being turned on, etc.

\*3: DZ-HS303A only.

\*4: The following three items cannot be performed singly. Be sure to perform these adjustments as a set with the three items, and in the order stated:

LCD contrast – 1

LCD bright

LCD contrast – 2

Item	Major Components				
	Lens Unit	CCD image sensor	IC1301	IC6003	GSL-3M/L Circuit board
Initial Data Write					
Video Level				●	
Burst Level				●	
Autofocus	●	●	●		
Auto Iris Control	●	●	●		
Sampling Pulse	●	●			●
Linearity <sup>(*3)</sup>		●			●
Matrix		●			
Chroma Gain		●			
Spot Noise		●			
LCD PLL					
LCD Contrast-1 <sup>(*4)</sup>					
LCD Bright <sup>(*4)</sup>					
LCD Contrast-2 <sup>(*4)</sup>					
LCD White Balance					

\*3: DZ-HS303A only.

\*4: The following three items cannot be performed singly. Be sure to perform these adjustments as a set with the three items, and in the order stated:

LCD contrast – 1

LCD bright

LCD contrast – 2

### 6-3-3 Purpose of Adjustments and Incompleted Phenomenon

Item	Purpose	Incompleted Phenomenon
Initial Data Write	To write initial data to EEPROM in which adjustment data has been stored	-----
Video Level	To set the video output level.	The picture becomes dark or whitish.
Burst Level	To set the burst level.	
Autofocus	To set out-of-focus correction level during zoom.	Focus is lost during zooming. It takes time until a subject is brought into focus, or correct focus is not obtained.
Auto Iris Control	To set iris control data.	The picture becomes too bright or dark.
Sampling Pulse	To measure the delay time in sampling IC, and optimize pulse timing.	Diagonal beats and horizontal noise occur.
Linearity	Adjustment item exclusively for DZ-HS303A: Procedure is to match the levels of two-system CCD image sensor outputs.	The brightness (luminance levels) or colors differ on the left and right of screen bounded at the center.
Matrix	To compensate for unevenness in the chroma signal and input auto white balance control data.	Color reproduction becomes defective.
Chroma Gain	To set color saturation for the reference color temperature.	Color of the picture is denser or lighter than that of the subject.
Spot Noise	To correct spot noise.	Spot noise occurs.
LCD PLL	To synchronize LCD image.	Synchronization of LCD image is distorted.
LCD Contrast-1	To set the bright level and contrast of the LCD monitor.	Color reproduction becomes defective of the LCD monitor.
LCD Bright		
LCD Contrast-2		
LCD White Balance		

## 6-4 Adjustment Procedure

Start the adjustment program referring to “6-2-5 Starting and Terminating Adjustment Software”.  
For the subsequent operation, operate the PC mouse while watching the PC monitor screen.

### Information:

- 1) Display ×××× on subsequent PC screen shows the model name.
- 2) The numbers on PC screens show the operational procedure.

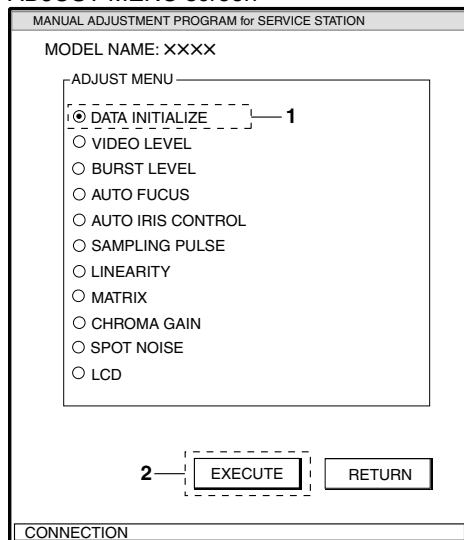
### 6-4-1 Initial Data Write

#### Note:

- 1) Write the initial data only after the MAN circuit board has been replaced when the backup of EEPROM data could not be performed using the MAN circuit board before replacement.  
Refer to “5-4 EEPROM data backup and write” for backup of EEPROM data.
- 2) Writing the initial data will initialize all the adjustment data in EEPROM. After writing, be sure to perform all the appropriate adjustments.

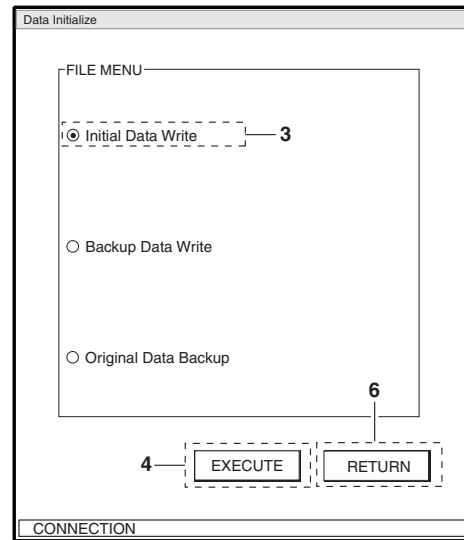
#### Procedure:

ADJUST MENU screen



- 1) Choose DATA INITIALIZE.
- 2) Click the EXECUTE button.

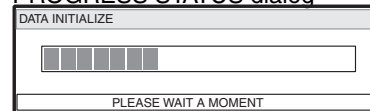
DATA INITIALIZE MENU screen



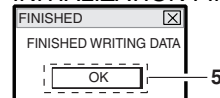
- 3) Choose Initial Data Write.
- 4) Click the EXECUTE button to start writing of initial data.

The progress status can be confirmed using the PROGRESS STATUS dialog.

PROGRESS STATUS dialog



INITIALIZATION FINISHED dialog



- 5) Click the OK button to restore the DATA INITIALIZE MENU screen.
- 6) Click the RETURN button on DATA INITIALIZE MENU screen to restore the ADJUST MENU screen, and then be sure to perform all the adjustment items.

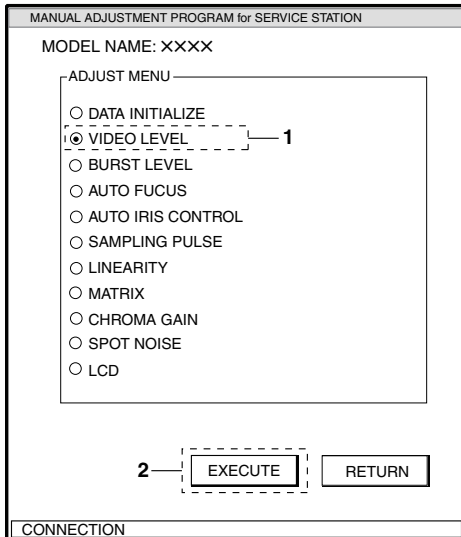
## 6-4-2 Video Level

Preparations:

- 1) Connect the oscilloscope CH1 to video out.
- 2) Switch the oscilloscope V-MODE to "CH1" and TRIGGER SOURCE to "CH1".

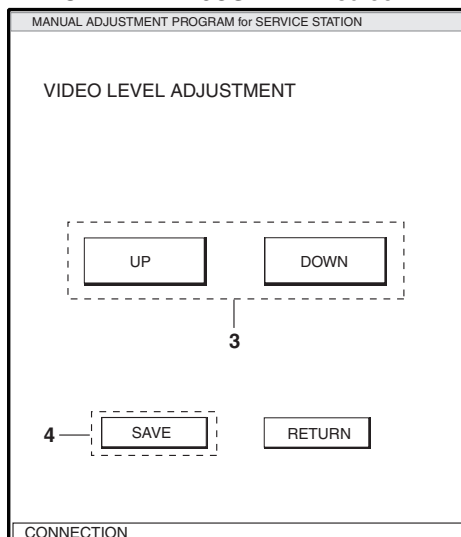
Procedure:

ADJUST MENU screen



- 1) Choose VIDEO LEVEL.
- 2) Click the EXECUTE button.

VIDEO LEVEL ADJUSTMENT screen



- 3) Click the UP or DOWN button so that level of waveform is  $1.0 \pm 0.05 \text{ Vp-p}$ . Click the button at approx. 2-second intervals while checking any increase or decrease in level of waveform.

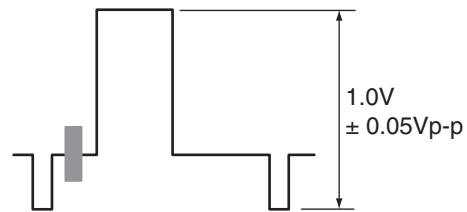
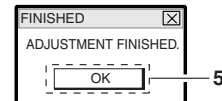


Fig. 6-4-1

- 4) After step 3) is complete, be sure to click the SAVE button.

Note that clicking the RETURN button will restore the ADJUST MENU screen to the status before the adjustment was performed.

ADJUSTMENT FINISHED dialog



- 5) Click the OK button in dialog to restore the ADJUST MENU screen.

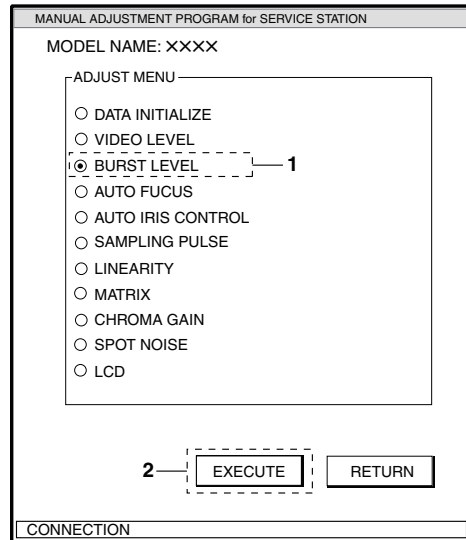
### 6-4-3 Burst Level

Preparations:

- 1) Connect the oscilloscope CH1 to video out.
- 2) Switch the oscilloscope V-MODE to "CH1" and TRIGGER SOURCE to "CH1".

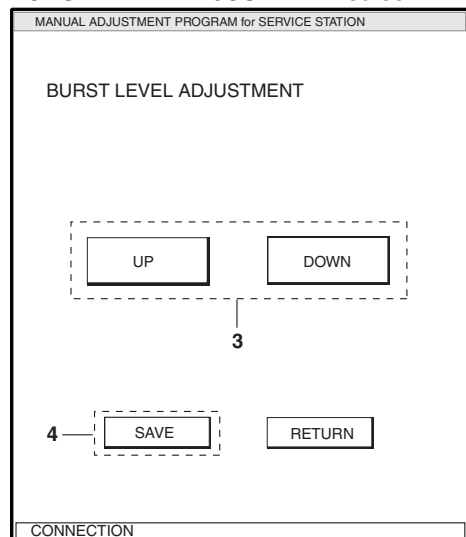
Procedure:

ADJUST MENU screen



- 1) Choose BURST LEVEL.
- 2) Click the EXECUTE button.

BURST LEVEL ADJUSTMENT screen



- 3) Click the UP or DOWN button so that burst level of the waveform is  $286\text{mV} \pm 15\text{mVp-p}$ . Click the button at approx. 2-second intervals while checking any increase or decrease in burst level.

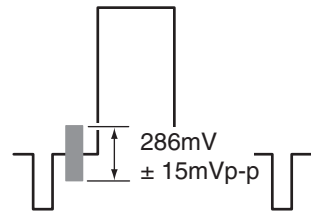
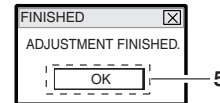


Fig. 6-4-2

- 4) After step 3) is complete, be sure to click the SAVE button.

Note that clicking the RETURN button will restore the ADJUST MENU screen to the status before the adjustment was performed.

ADJUSTMENT FINISHED dialog



- 5) Click the OK button in dialog to restore the ADJUST MENU screen.

## 6-4-4 Autofocus

Preparations:

- 1) Use the backfocus chart vertically (portrait mode) as shown in Fig. 6-4-3.
- 2) Point at backfocus chart 1500mm  $\pm$  5 mm away from the lens surface: Measure the distance precisely.
- 3) Set the zoom to telephoto end, and make sure that the center of backfocus chart appears.
- 4) If an illuminometer is available and the brightness of illumination can be varied, set the illuminance of backfocus chart surface to 200-400 lx. This setting is not necessary if the brightness of illumination cannot be varied: Perform adjustment under indoor light that is as bright as possible.

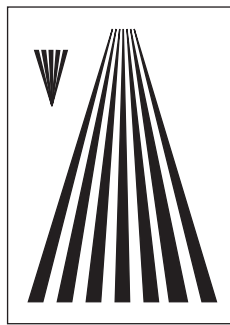
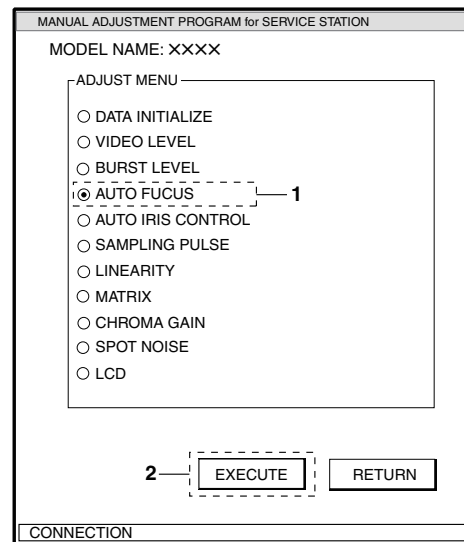


Fig. 6-4-3 Backfocus Chart

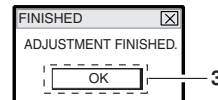
Procedure:

### ADJUST MENU screen



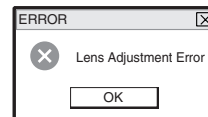
- 1) Choose AUTO FOCUS.
- 2) Click the EXECUTE button to start adjustment.

### ADJUSTMENT FINISHED dialog



- 3) Click the OK button in dialog to restore the ADJUST MENU screen.

### AF ADJUSTMENT ERROR dialog



If the AF ADJUSTMENT ERROR dialog appears, click the OK button in dialog, perform the following troubleshooting, and then execute readjustment:

- a) Increase the illumination.
- b) Set the distance between the backfocus chart and lens surface precisely to 1500mm  $\pm$  5 mm.

If the AF adjustment error dialog still appears even after troubleshooting, the connection of lens unit may be incorrect or the unit may be faulty.

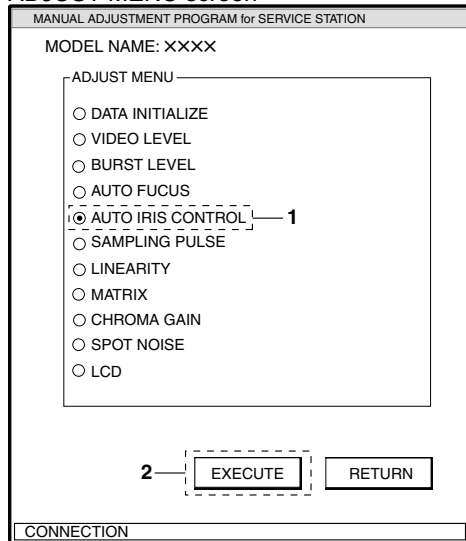
## 6-4-5 Auto Iris Control

Preparation:

Set zoom to wide-angle end, and point at light box without chart, filling the screen.

Procedure:

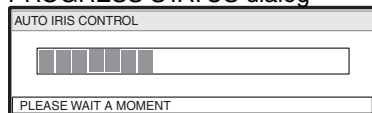
ADJUST MENU screen



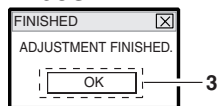
- 1) Choose AUTO IRIS CONTROL.
- 2) Click the EXECUTE button to start adjustment.

The progress status can be confirmed using the PROGRESS STATUS dialog.

PROGRESS STATUS dialog

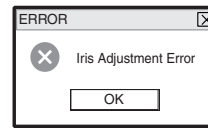


ADJUSTMENT FINISHED dialog



- 3) Click the OK button in dialog to restore the ADJUST MENU screen.

IRIS ADJUSTMENT ERROR dialog



If the IRIS ADJUSTMENT ERROR dialog appears, click the OK button in dialog, perform the appropriate corrective action, and then perform readjustment. If the IRIS ADJUSTMENT ERROR dialog still appears after the corrective action, the lens unit may be faulty:

- a) Turn the light box off, and then make sure that no surrounding light reflects on glass surface of light box. If any surrounding light does reflect on it, perform adjustment in a place where no surrounding light will affect the adjustment.
- b) Widen or shorten the distance between the light box and DVD video camera/recorder.

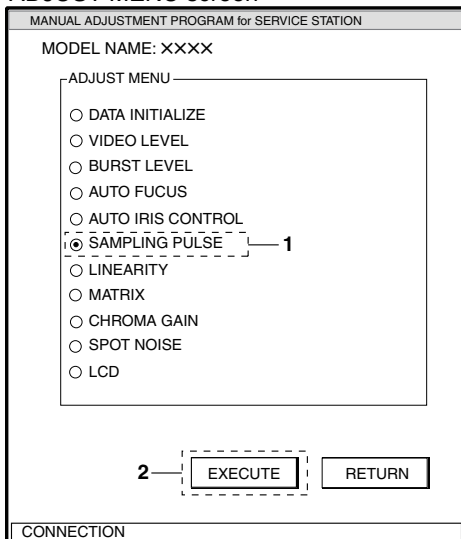
## 6-4-6 Sampling Pulse

**Note:**

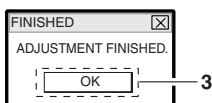
Start this adjustment after the circuit operation is stabilized, e.g., after leaving the DVD video camera/recorder for at least one hour at normal temperature, and then starting within 90 seconds after turning it on. Unstable circuit operation will cause improper adjustment.

**Preparation:**

Set zoom to wide-angle end, and point at light box without chart, filling the screen.

**Procedure:****ADJUST MENU screen**

- 1) Choose SAMPLING PULSE.
- 2) Click the EXECUTE button to start adjustment.

**ADJUSTMENT FINISHED dialog**

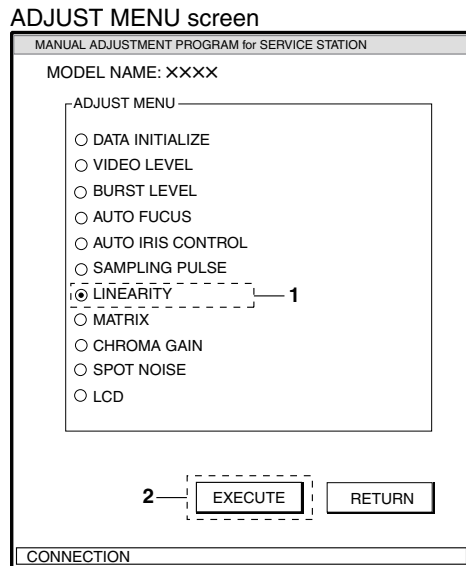
- 3) Click the OK button in dialog to restore the ADJUST MENU screen.

## 6-4-7 Linearity [DZ-HS303A only]

Preparation:

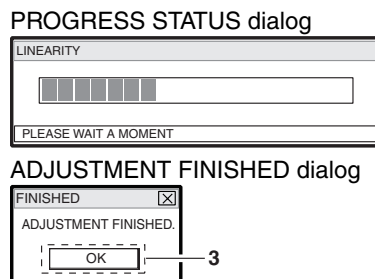
Set zoom to wide-angle end, and point at light box without chart, filling the screen.

Procedure:



- 1) Choose LINEARITY.
- 2) Click the EXECUTE button to start adjustment.

The progress status can be confirmed using the PROGRESS STATUS dialog.



- 3) Click the OK button in dialog to restore the ADJUST MENU screen.

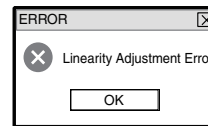
Information:

If the brightness (brightness levels) or colors are different on the left and right of monitor screen bounded at the center, after the linearity adjustment ends, perform the following. If the symptom reappears after troubleshooting is complete, the lens unit may be faulty.

Troubleshooting:

- 1) Adjust “6-4-6 Sampling Pulse”.
- 2) Readjust the linearity.

LINEARITY ADJUSTMENT ERROR dialog



If the LINEARITY ADJUSTMENT ERROR dialog appears, click the OK button in dialog, perform the appropriate corrective action, and then perform readjustment. If the LINEARITY ADJUSTMENT ERROR dialog still appears after the corrective action, the lens unit may be faulty:

- a) Turn the light box off, and then make sure that no surrounding light reflects on glass surface of light box. If any surrounding light does reflect on it, perform adjustment in a place where no surrounding light will affect the adjustment.
- b) Widen or shorten the distance between the light box and DVD video camera/recorder.

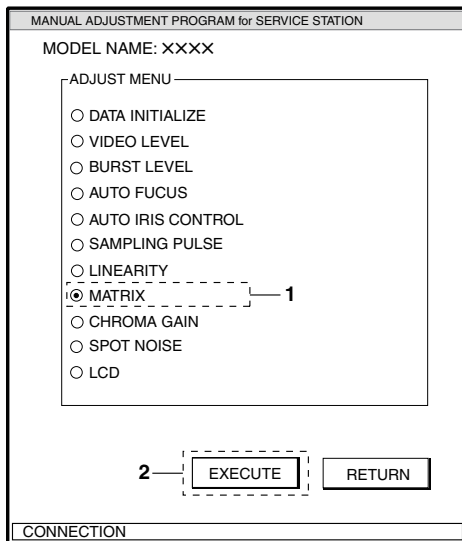
## 6-4-8 Matrix

Preparation:

- 1) Point at light box without chart, filling the screen.
- 2) Prepare the C12 light balancing filter (step-up rings): Attach it during adjustment.

Procedure:

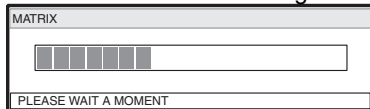
ADJUST MENU screen



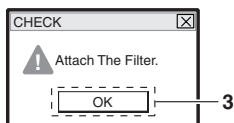
- 1) Choose MATRIX.
- 2) Click the EXECUTE button start adjustment.

The progress status can be confirmed using the PROGRESS STATUS dialog.

PROGRESS STATUS dialog

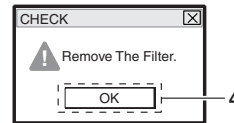


ATTACH THE FILTER dialog



- 3) The ATTACH THE FILTER dialog will appear during setup. Attach the C12 light balancing filter over the lens of DVD video camera/recorder, and then click the OK button in ATTACH THE FILTER dialog.

REMOVE THE FILTER dialog

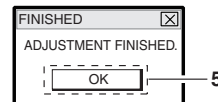


- 4) The REMOVE THE FILTER dialog will appear during setup.

Remove the C12 light balancing filter from the lens of DVD video camera/recorder, and then click the OK button in REMOVE THE FILTER dialog.

After that, the ATTACH THE FILTER dialog and REMOVE THE FILTER dialog may occasionally appear: Reattach the C12 light balancing filter and remove it each time.

ADJUSTMENT FINISHED dialog



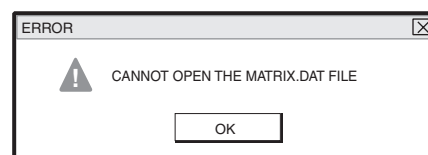
- 5) Click the OK button in dialog to restore the ADJUST MENU screen.

### Note:

When the "CANNOT OPEN THE MATRIX.DAT FILE" dialog appears during adjustment, click the OK button, and then create the reference data, referring to "6-1 Creating Reference Data".

The "CANNOT OPEN THE MATRIX.DAT FILE" dialog will appear when reference data has not been created.

CANNOT OPEN THE MATRIX.DAT FILE dialog



## 6-4-9 Chroma Gain

### Preparation:

- 1) Point at light box without chart, filling the screen.
- 2) Prepare the color bar chart: Use it during adjustment.

### Procedure:

- 1) Press the MENU button on DVD video camera/recorder, and **◀◀ / ▶▶ / ◀◀ / ▶▶** buttons to specify “White Bal.: Set” to display the white balance screen. (See Fig. 6-4-4)

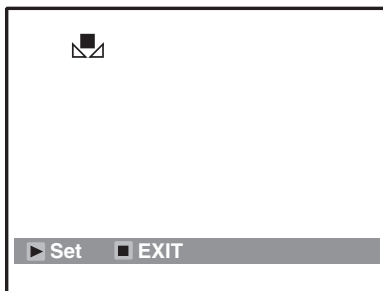


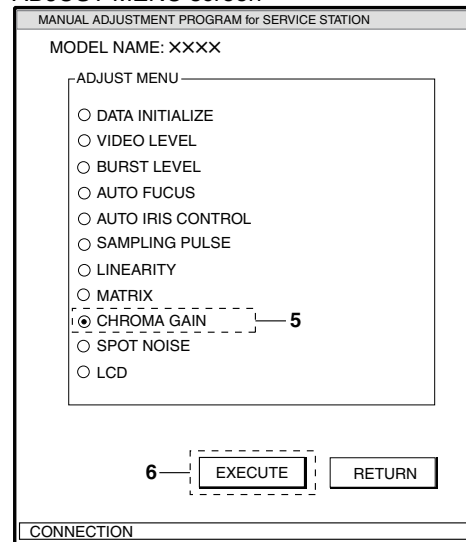


Fig. 6-4-4 White balance set screen

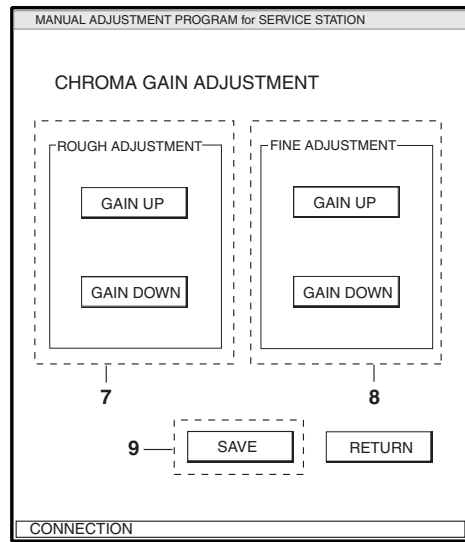
- 2) Press the **▶/||** button: The “” mark on the white balance setting screen will blink. Hold down the button until the “” mark changes to a steady light.
- 3) Press the STOP/CANCEL button on DVD video camera/recorder.
- 4) Insert the color bar chart into light box and point the DVD video camera/recorder at the chart so that it fills the screen.

### ADJUST MENU screen



- 5) Choose CHROMA GAIN.
- 6) Click the EXECUTE button.

## CHROMA GAIN ADJUSTMENT screen



- 7) Click the GAIN UP or GAIN DOWN button in ROUGH ADJUSTMENT box so that the value of red vector or red level approaches that in Table 6-4-1. Click the button at approx. 2-second intervals while checking the increase or decrease of vector or level.
- 8) Click the GAIN UP or GAIN DOWN button in FINE ADJUSTMENT box so that the value of red vector or red level matches that in Table 6-4-1. Click the button at approx. 2-second intervals while checking any increase or decrease in vector or level.

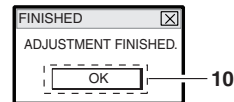
Table 6-4-1 Value of Red Level/Vector

Model	When using a vectorscope	When using an oscilloscope
DZ-HS303A	A = 240% $\pm$ 5%	B = 690mV $\pm$ 20mV
DZ-HS300A		

- 9) After step 8) is complete, be sure to click the SAVE button.

Note that clicking the RETURN button will restore the ADJUST MENU screen to the status before the adjustment was performed.

## ADJUSTMENT FINISHED dialog



- 10) Click the OK button in dialog to restore the ADJUST MENU screen.
- 11) Press the MENU button on DVD video camera/recorder, and use the  $\lll / \ggg / \lll / \ggg / \ggg / \ggg$  to specify (return to) "White Bal.: Auto".

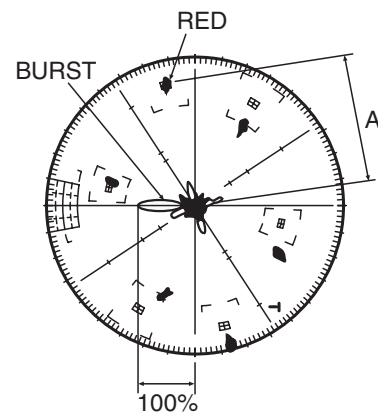


Fig. 6-4-5 When using a vectorscope

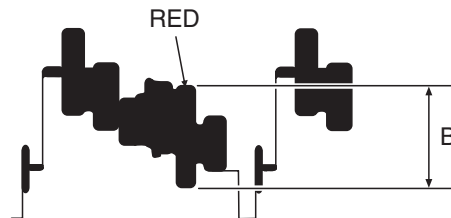


Fig. 6-4-6 When using an oscilloscope

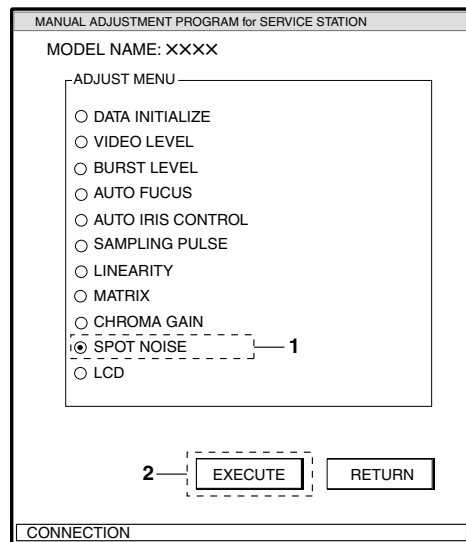
## 6-4-10 Spot Noise

### Information:

- 1) The SPOT NOISE adjustment compensates for bright points that appear on the screen, and these are caused by a defect in pixel of CCD image sensor that may occur when DVD video camera/recorder is used under particular conditions or for a long time. Therefore, execute SPOT NOISE only in the following cases:
  - a) Pixel defect occurs in CCD image sensor and a bright point appears on screen,
  - b) CCD image sensor is replaced.
  - c) "Initial Data Write" is executed
- 2) The presence or absence of a bright point that appears on screen due to pixel defect on CCD image sensor can easily be judged by capping the lens. Use a CRT color monitor for this check.

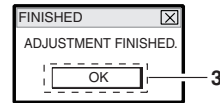
### Procedure:

#### ADJUST MENU screen



- 1) Choose SPOT NOISE.
- 2) Click the EXECUTE button to start adjustment.  
When SPOT NOISE starts, the DVD video camera/recorder will automatically turn on again.

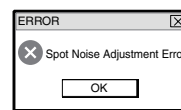
#### ADJUSTMENT FINISHED dialog



- 3) Click the OK button in dialog to restore the ADJUST MENU screen.

If bright point still appears after adjustment is finished, the CCD image sensor may be faulty.

#### STOP NOISE ERROR dialog



If the SPOT NOISE ERROR dialog appears, press the "OK" button in the dialog to restore the adjustment menu, and then perform the following procedure. If the SPOT NOISE ERROR dialog still appears after executing this procedure, the CCD image sensor may be faulty:

- 1) Refer to "6-2-5 Starting and Terminating Adjustment Program" to terminate the adjustment program.
- 2) Set the power switch on DVD video camera/recorder to "OFF", unplug the DC power cord from the DVD video camera/recorder, and then leave the DVD video camera/recorder without any operation a few hours, until the temperature inside it goes down.
- 3) Reconnect the DC power cord to the DVD video camera/recorder after it has been left for a few hours, and then set the power switch to "HDD".
- 4) Refer to "(1) Setting the DVD video camera/recorder" in "6-2-4 Setting for Adjustment", and check the setting status.
- 5) Restart the adjustment program, and then perform spot noise adjustment again.

## 6-4-11 LCD

### Note:

- 1) Perform LCD only after replacing the MAN circuit board, LCD circuit board or LCD unit, or executing "Initial Data Write".
- 2) Neither light box nor chart is needed for LCD adjustment.

Before performing any adjustments for LCD, be sure to shift the DVD video camera/recorder to the test mode using the procedure below, and then display the LCD ADJUSTMENT MENU.

### Procedure:

- 1) Choose LCD on the ADJUST MENU screen.
- 2) Click the EXECUTE button on ADJUST MENU screen to shift the DVD video camera/recorder to the test mode. The progress status can be confirmed using the PROGRESS STATUS dialog.
- 3) When the DVD video camera/recorder has shifted to the test mode, the LCD screen will be black and white (see Fig. 6-4-7), and the LCD ADJUSTMENT MENU screen will appear on the PC monitor screen.

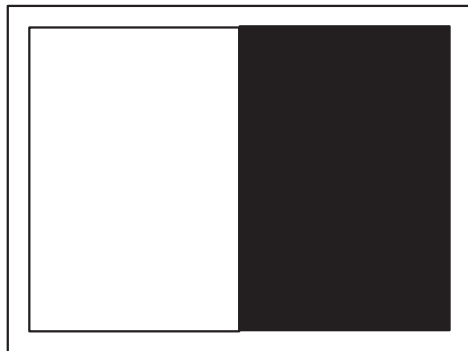


Fig. 6-4-7 LCD Monitor Screen

### ADJUST MENU screen

MANUAL ADJUSTMENT PROGRAM for SERVICE STATION

MODEL NAME: XXXX

ADJUST MENU

- ☐ DATA INITIALIZE
- ☐ VIDEO LEVEL
- ☐ BURST LEVEL
- ☐ AUTO FOCUS
- ☐ AUTO IRIS CONTROL
- ☐ SAMPLING PULSE
- ☐ LINEARITY
- ☐ MATRIX
- ☐ CHROMA GAIN
- ☐ SPOT NOISE
- ☒ LCD

1

2

EXECUTE RETURN

CONNECTION

### PROGRESS STATUS dialog

LCD ADJUSTMENT INITIALIZE

██████████

PLEASE WAIT A MOMENT

### LCD ADJUSTMENT MENU screen

MANUAL ADJUSTMENT PROGRAM for SERVICE STATION

LCD ADJUSTMENT MENU

LCD ADJUSTMENT MENU

- ☐ PLL
- ☐ CONTRAST
- ☐ BRIGHT
- ☐ WHITE BALANCE

EXECUTE RETURN

CONNECTION

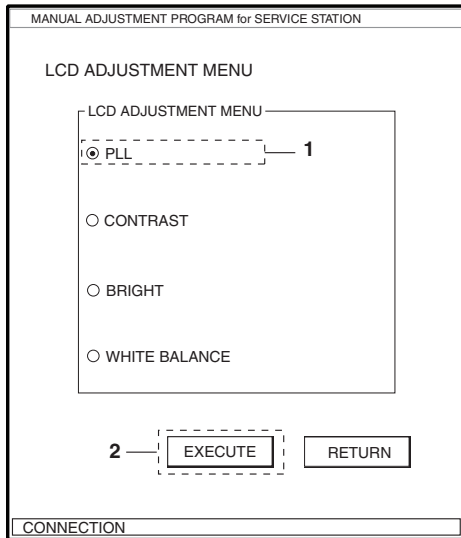
**(1) LCD PLL**

Preparation:

Connect the frequency counter to “LCD-HDO (pin 11)” of Halcyon connector.

Procedure:

LCD ADJUSTMENT MENU screen

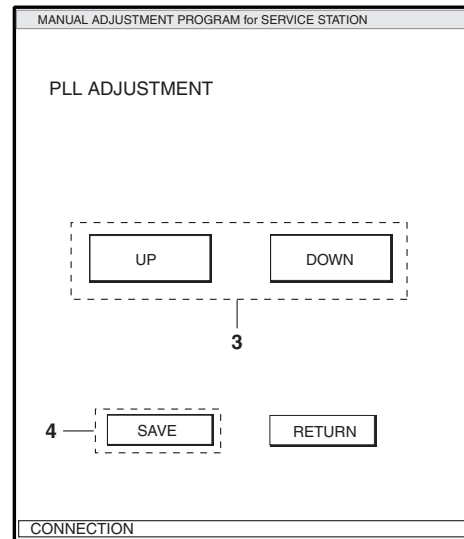


1) Choose PLL.

2) Click the EXECUTE button.

Synchronization of the video on LCD monitor screen will be off at this time, and the image will flow.

PLL ADJUSTMENT screen.

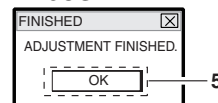


3) Click the UP or DOWN button so that the frequency is  $15.734 \text{ kHz} \pm 0.1 \text{ kHz}$ . Click the button at approx. 2-second intervals while checking the variation of frequencies.

4) After step 3) is complete, be sure to click the SAVE button.

Note that clicking the RETURN button will restore the LCD ADJUSTMENT MENU screen to the status before the adjustment was performed.

ADJUSTMENT FINISHED dialog



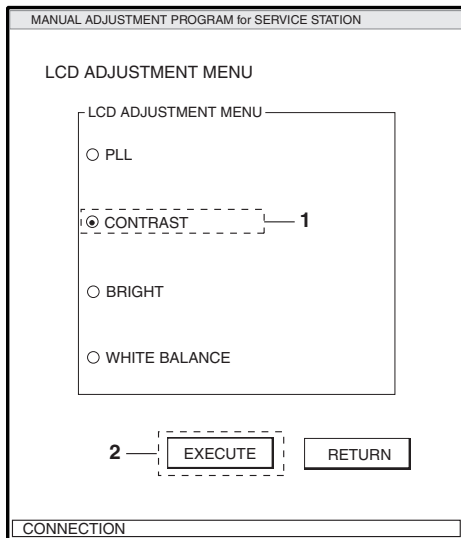
5) Click the OK button in dialog to restore the LCD ADJUSTMENT MENU screen.

**(2) LCD Contrast-1****Note:**

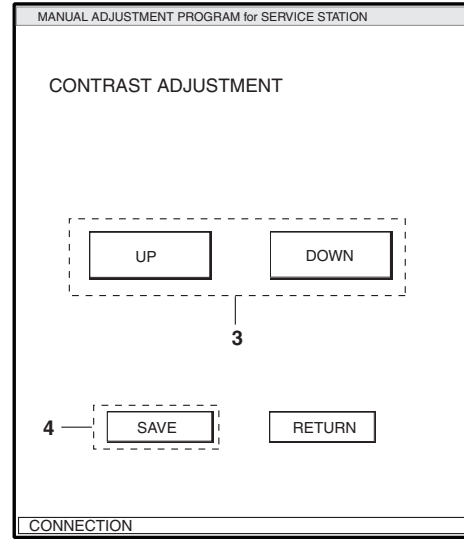
Be sure to adjust LCD brightness and LCD contrast-2 after completing LCD contrast-1 adjustment.

**Preparations:**

- 1) Connect the oscilloscope CH2 to “LCD-G (pin 13)” of Halcyon connector.
- 2) Switch the oscilloscope V-MODE to “CH2”: Leave the TRIGGER SOURCE in “CH1” as is.

**Procedure****LCD ADJUSTMENT MENU screen**

- 1) Choose CONTRAST.
- 2) Click the EXECUTE.

**CONTRAST ADJUSTMENT screen**

- 3) Click the UP or DOWN button so that the value of level A of waveform is  $2.20V \pm 0.02V_{p-p}$ . Click the button at approx. 2-second intervals while checking any increase or decrease in level A.

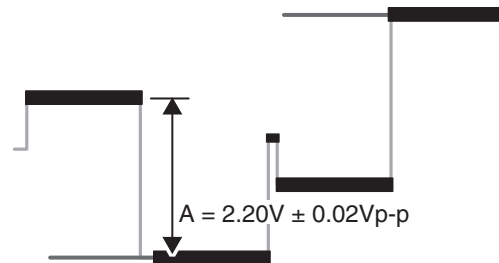
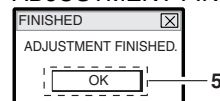


Fig. 6-4-8 Waveform of LCD Contrast-1 Adjustment

- 4) After step 3) is complete, be sure to click the SAVE button.

Note that clicking the RETURN button will restore the LCD ADJUSTMENT MENU screen to the status before the adjustment was performed.

**ADJUSTMENT FINISHED dialog**

- 5) Click the OK button in dialog to restore the LCD ADJUSTMENT MENU screen.

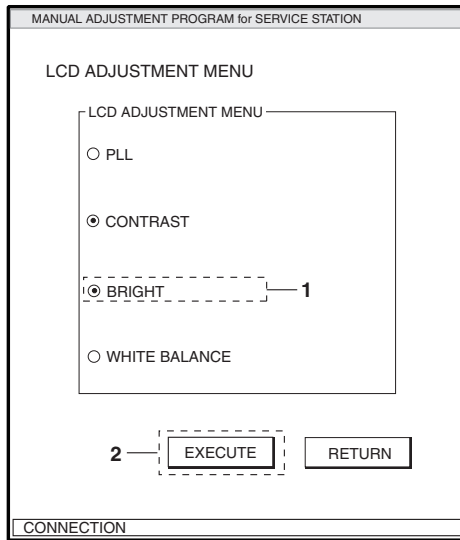
### (3) LCD Brightness

Preparations:

- 1) Connect the oscilloscope CH2 to "LCD-G (pin 13)" of Halcyon connector.
- 2) Switch the oscilloscope V-MODE to "CH2": Leave the TRIGGER SOURCE in "CH1" as is.

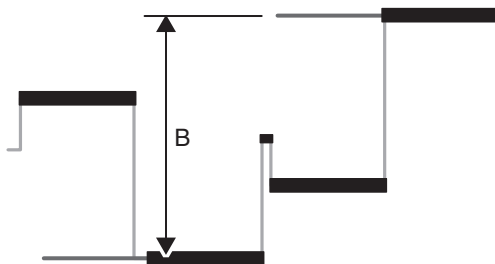
Procedure:

LCD ADJUSTMENT MENU screen

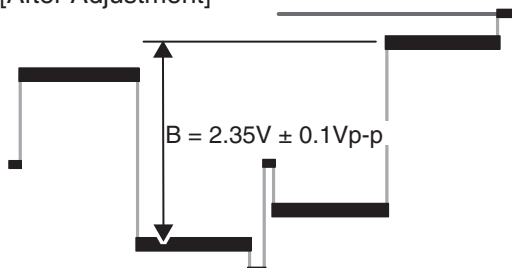


- 1) Choose BRIGHT.
- 2) Click the EXECUTE button.

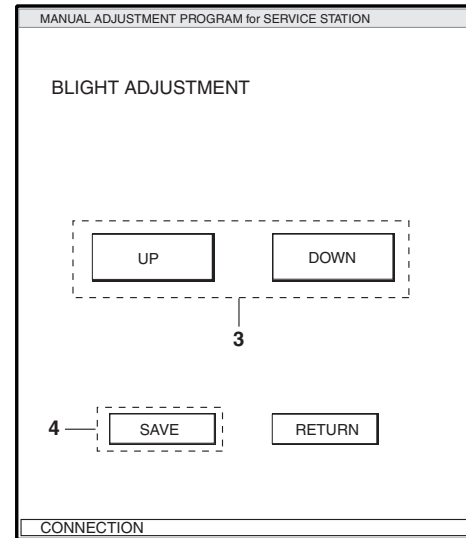
[Before Adjustment]



[After Adjustment]



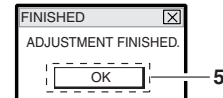
BRIGHT ADJUSTMENT screen



- 3) Click the UP or DOWN button so that the value of level B of waveform is  $2.35V \pm 0.1Vp-p$ . Click the button at approx. 2-second intervals while checking any increase or decrease in level B.
- 4) After step 3) is complete, be sure to click the SAVE button.

Note that clicking the RETURN button will restore the LCD ADJUSTMENT MENU screen to the status before the adjustment was performed.

ADJUSTMENT FINISHED dialog



- 5) Click the OK button in dialog to restore the LCD ADJUSTMENT MENU screen.

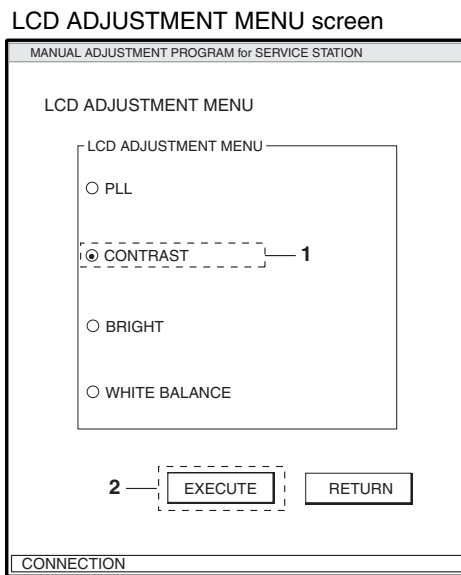
Fig. 6-4-9 Waveform of LCD Bright Adjustment

**(4) LCD Contrast-2**

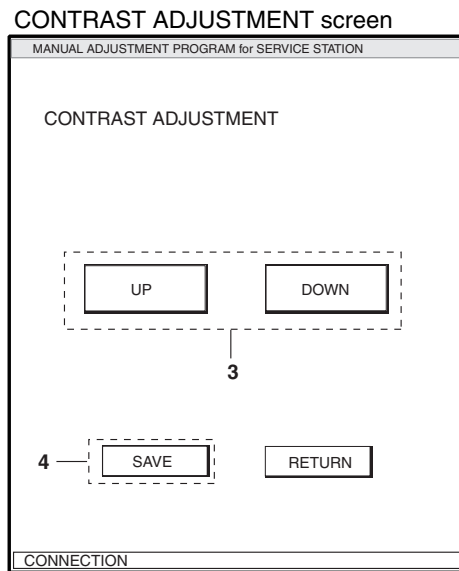
Preparations:

- 1) Connect the oscilloscope CH2 to “LCD-G (pin 13)” of Halcyon connector.
- 2) Switch the oscilloscope V-MODE to “CH2”: Leave the TRIGGER SOURCE in “CH1” as is.

Procedure



- 1) Choose CONTRAST.
- 2) Click the EXECUTE button.



- 3) Click the UP or DOWN button so that the value of level A of waveform is  $2.00V \pm 0.02V_{p-p}$ . Click the button at approx. 2-second intervals while checking any increase or decrease in level A.

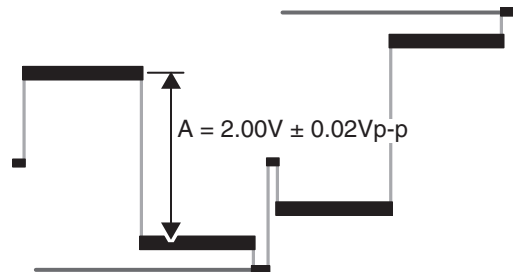
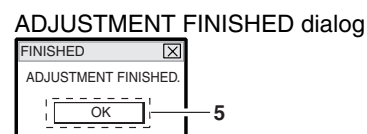


Fig. 6-4-10 Waveform of LCD Contrast-2 Adjustment

- 4) After step 3) is complete, be sure to click the SAVE button.

Note that clicking the RETURN button will restore the LCD ADJUSTMENT MENU screen to the status before the adjustment was performed.



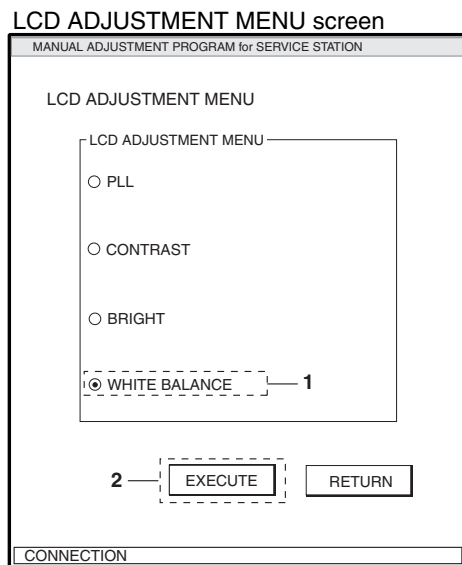
- 5) Click the OK button in dialog to restore the LCD ADJUSTMENT MENU screen.

**(5) LCD White Balance**

Preparations:

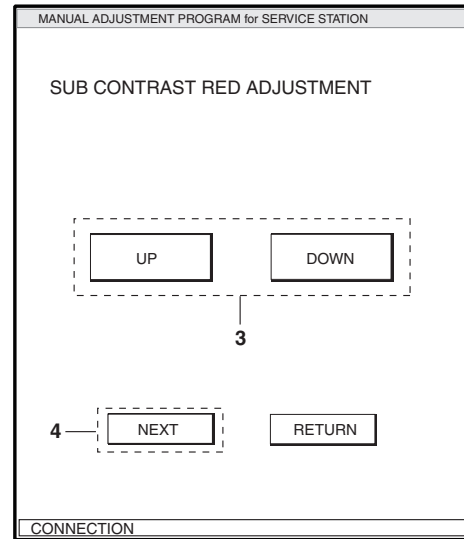
- 1) Connect the oscilloscope CH1 to “LCD-R (pin 14)” of Halcyon connector.
- 2) Connect the oscilloscope CH2 to “LCD-G (pin 13)” of Halcyon connector.
- 3) Connect the oscilloscope EXT TRIG to video output.
- 4) Switch the oscilloscope V-MODE to “ALT” and TRIGGER SOURCE to “EXT”.
- 5) Set the switches and knobs on oscilloscope so that the CH1 and CH2 waveforms appear as shown in Fig. 6-4-11.

Procedure



- 1) Choose WHITE BALANCE.
- 2) Click the EXECUTE button.

SUB CONTRAST RED ADJUSTMENT screen.



- 3) Click the UP and DOWN buttons so that level a of CH1 waveform is equal to level b of CH2 waveform. Click the button at approx. 2-second intervals while checking any increase or decrease in level a.

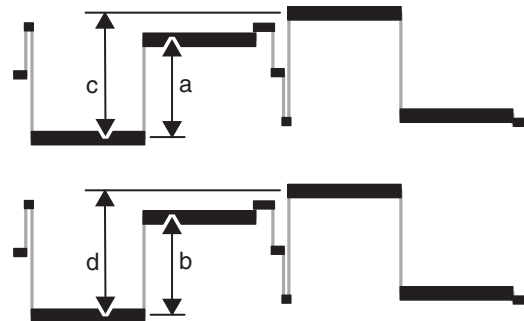
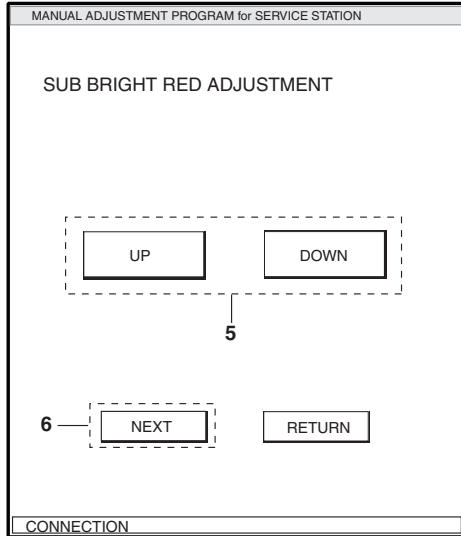


Fig. 6-4-11 Waveform of LCD White Balance Adjustment

- 4) After step 3) is complete, be sure to click the NEXT button.

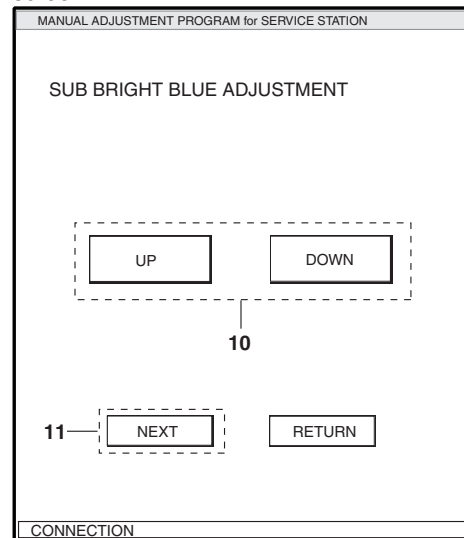
Note that clicking the RETURN button will restore the LCD ADJUSTMENT MENU screen to the status before the adjustment was performed.

SUB BRIGHT RED ADJUSTMENT screen.



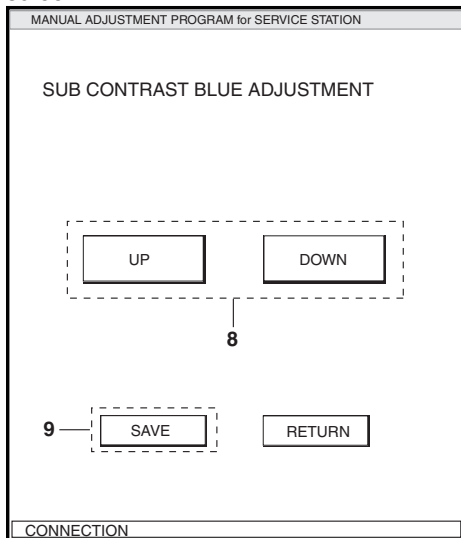
- 5) Use the same procedure as in step 3) to equalize levels c and d of the waveform.
- 6) After step 5) is complete, be sure to click the NEXT button.
- 7) Connect the oscilloscope CH1 to “LCD-B (pin 12)” of Halcyon connector.

SUB BRIGHT BLUE ADJUSTMENT screen.



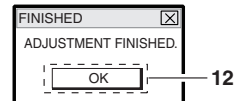
- 10) Use the same procedure as in step 3) to equalize levels c and d of the waveform.
- 11) After step 10) is complete, be sure to click the SAVE button.

SUB CONTRAST BLUE ADJUSTMENT screen.



- 8) Use the same procedure as in step 3) to equalize levels a and b of the waveform. (See Fig. 6-4-11)
- 9) After step 8) is complete, be sure to click the NEXT button.

ADJUSTMENT FINISHED dialog

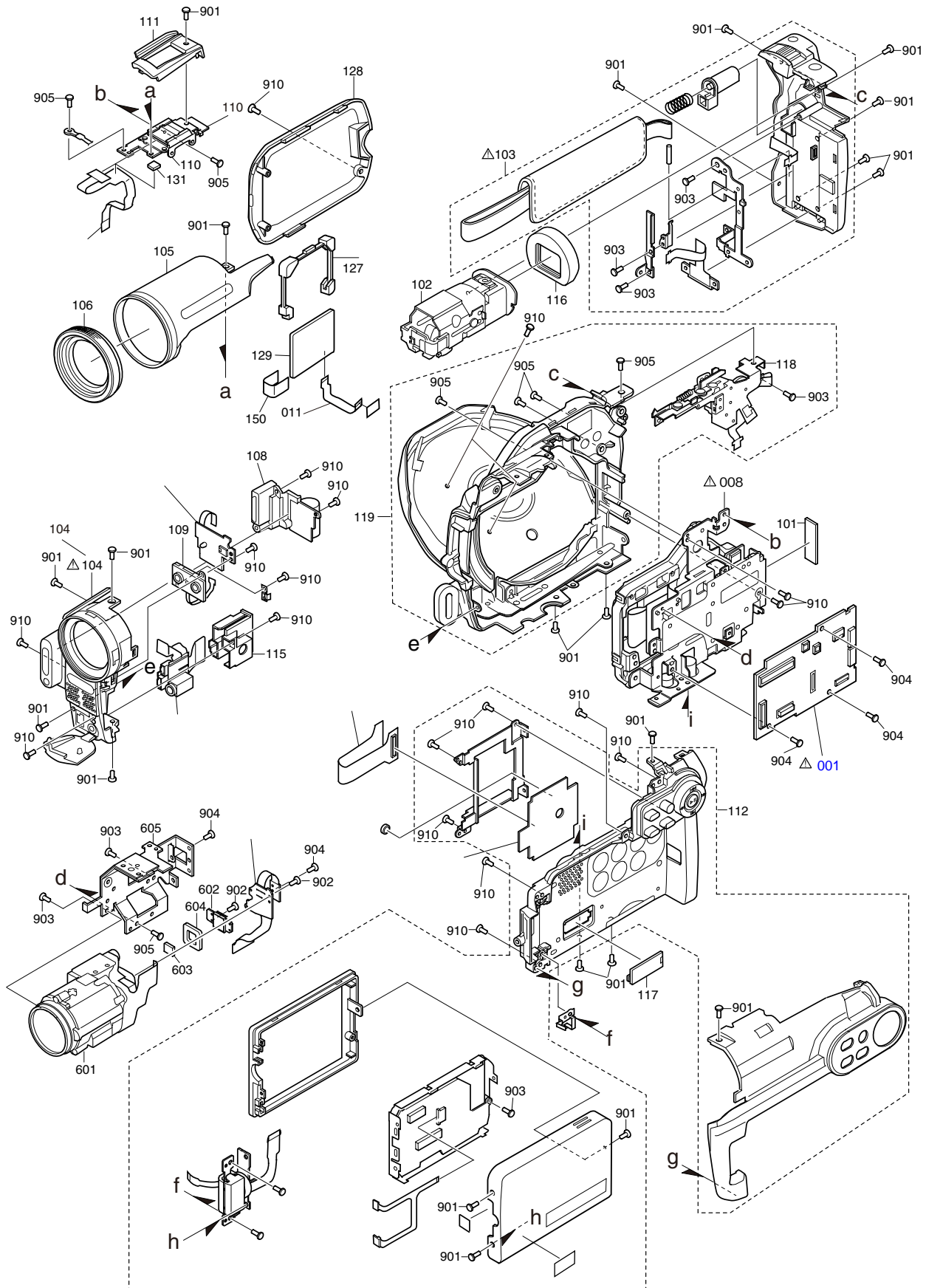


- 12) Click the OK button in dialog to restore the LCD ADJUSTMENT MENU screen.
- 13) Click the RETURN button in LCD ADJUSTMENT MENU to restore the ADJUST MENU screen.

## DZ-HS303A Exploded View

## 7-1 DZ-HS303A

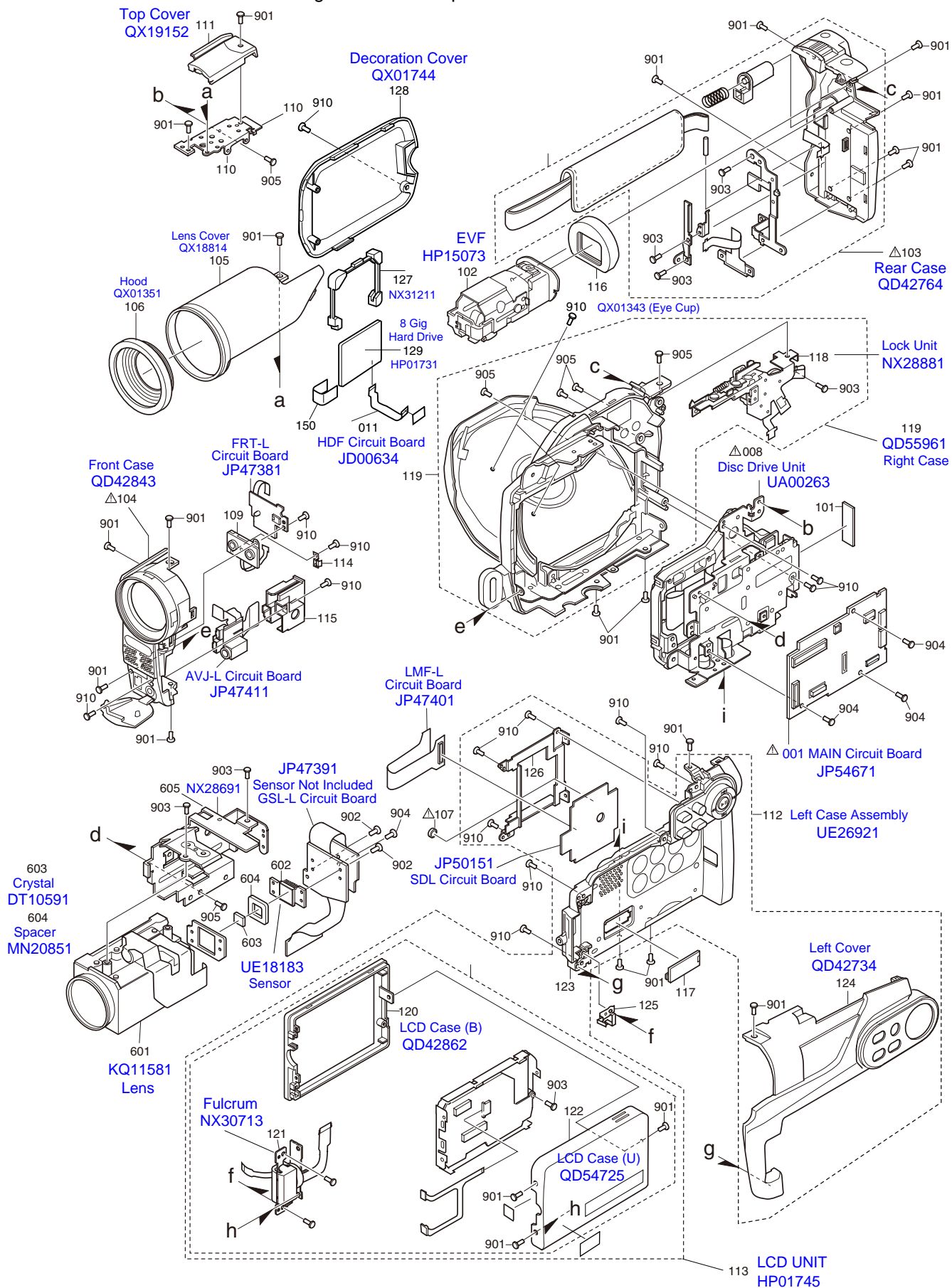
Note: Components without any numbers in exploded views had not been assigned as service parts as of the date of issue of this manual.



## 7-2 DZ-HS300A EXPLODED VIEW

CH 2

Note: Components without any numbers in exploded views had not been assigned as service parts as of the date of issue of this manual.



## Parts List by Location

Caution	Symbol No.	Parts No.	Description	Note
⚠	001	JP54671	PWB ASSY MAN-HBNMA	For HS300A
⚠	008	UA00263	DVD DRIVE ASSY(PC6K C)	For HS300A
	011	JD00634	PWB ASSY HDF	For HS300A
	101	MC10623	HEAT SINK	For HS300A
	102	HP15073	EVF ASSY	For HS300A
⚠	103	QD42764	CASE,REAR	For HS300A
⚠	104	QD42843	CASE,FRONT	For HS300A
	105	QX18814	COVER,LENS	For HS300A
	106	QX01351	HOOD	For HS300A
⚠	107	FS11091	BATTERY	For HS300A
	109	GH00351	MIC	For HS300A
	110	NA35851	FRAME, TOP	For HS300A
	111	QX19152	COVER, TOP	For HS300A
	112	UE26921	CASE(L)ASSY	For HS300A
	113	HP01745	LCD UNIT	For HS300A
	114	NA82971	GROUND PLATE	For HS300A
	115	NJ13441	HOLDER, JACK	For HS300A
	116	QX01343	CUP, EYE	For HS300A
	117	QX01382	COVER, ADJUSTMENT	For HS300A
	118	NX28881	LOCK UNIT	For HS300A
	119	QD55961	CASE, SIDE R	For HS300A
	120	QD42862	CASE, LCD(B)	For HS300A
	121	NX30713	FULCRUM ASSY	For HS300A
	122	QD54725	CASE, LCD(U)	For HS300A
	123	QD42773	CASE, SIDE L	For HS300A
	124	QD42734	COVER(L)	For HS300A
	125	NA36032	PLATE, GROUND	For HS300A
	126	NA35951	FRAME, SDL	For HS300A
	127	NX31211	DAMPER(HDD)	For HS300A
	128	QX01744	COVER, DECORATION	For HS300A
	129	HP01731	HDD(8GB)	For HS300A
	150	MF02311	TAPE(AL)	For HS300A
	601	KQ11581	LENS ASSY	For HS300A
	602	UE18183	SENSOR ASSY	For HS300A
	603	DT10591	CRYSTAL	For HS300A
	604	MN20851	CUSHION	For HS300A
	605	NX28691	FRAME, LENS	For HS300A
	901	MK14206	SCREW(1.7X4)	For HS300A
	902	MK11911	SCREW(1.7X5)	For HS300A
	903	MK13782	SCREW(1.7X4)	For HS300A
	904	MK13791	SCREW(M1.7X3)	For HS300A
	905	MK14208	SCREW(1.7X2.5)	For HS300A
	910	MK13491	SCREW(1.7X4)	For HS300A
	-	DN01002	CD-ROM	For HS300A
⚠	-	EV11004	CORD, ACINLET	For HS300A
	-	EV11011	CORD, DC	For HS300A
	-	EW12525	CORD, AVS	For HS300A
	-	EW12531	CORD, USB	For HS300A
	-	MS10812	SHEET	For HS300A
	-	QX01391	CAP, LENS	For HS300A
	-	TS16758	STRAP, SHOLDER	For HS300A
⚠	-	TS19401	AC ADAPTOR(DZ-ACS3)	For HS300A
	BL1903	BE10134R	COIL 180UH	
	BL2001C	BM00139R	FILTER	For HS300A
	BL2080C	BM10697R	CORE	For HS300A
	BL4001	BM00131R	FILTER	
	BL4002	BM10697R	CORE	
	BL5001	BM10682R	COIL	
	BL5002	BM10682R	COIL	

BL5003	BM10682R	COIL	
BL6200	BM10682R	COIL	
BL7001	BM10349R	COIL	
BL7002	BM10349R	COIL	
BL7003	BM10696R	COIL	
BL7004	BM10696R	COIL	
BL7005	BM10696R	COIL	
BL7006	BM10349R	COIL	
BL7007	BM10696R	COIL	
BL7008	BM10349R	COIL	
BL7009	BM00131R	FILTER	
BL7010	BM00131R	FILTER	
C2309	AD10891R	CHIP CAPACITOR 100UF+-20% 6.3V	For HS300A
CP5001	BM11091R	FILTER	
D0001	CC00632R	DIODE RB491D	
D1150C	5337353	DIODE MA132K	For HS300A
D1800	CH12281	DIODE PD410P12E00F	For HS300A
D1801	CC13061R	DIODE DAP222	For HS300A
D2301	CC11541R	DIODE RB521S-30	
D6000	5337353	DIODE MA132K	
△ F7000	FM10751R	FUSE	
△ F7001	FM10751R	FUSE	
△ F7002	FM10751R	FUSE	
△ F7003	FM10751R	FUSE	
△ F7004	FM10751R	FUSE	
△ F7005	FM10751R	FUSE	
IC0001	CK54811R	IC S-8533A33AFT-TB-G	
IC1301	CK46701U	IC UPD168153	
IC1302	CK49831R	IC NJM13404R-TE1	
IC1303	CK40232R	IC SN74AHC1G66HDCK	
IC1401C	FU10795R	GYRO SENSOR	For HS300A
IC1402C	FU10796R	GYRO SENSOR	For HS300A
IC1403C	CK49921R	IC NJU7018V-TE1	For HS300A
IC1800	CK49891R	IC NJM2112V-TE1Z	For HS300A
IC1801	CE10291R	SENSOR,REMOTE(RS-771)	For HS300A
IC2001C	CK43292R	IC SN74LVC04APWR-ZF	For HS300A
IC2003C	CK12062R	IC UPD16510GR-8JG-E1	For HS300A
IC2201C	CK42681R	IC HD49334ANP	For HS300A
IC2300	CK47131R	IC BR9016ARFV-WE2	
IC2301	CK49541R	IC TC7W126FU	
IC2302	CK48821R	IC TK11251CMC	
IC4006	CK47831R	IC	
IC4007	CK42482R	IC SN74LV1G08DCKR	
IC4008	CK42482R	IC SN74LV1G08DCKR	
IC4009	CK41123R	IC S-814A33AMC	
IC4010	CK48111R	IC HD74LV1GW97A	
IC4011	CK40232R	IC SN74AHC1G66HDCK	
IC4012	CK49771R	IC S-80952CNNB	
IC4013	CK49771R	IC S-80952CNNB	
IC5001	CK48771U	IC M66592WG	
IC6003	CK61561R	IC AK4568VQ	
IC7000	CK43974R	IC NJM2872AF25	
IC7001	CK49881R	IC NJM2872AF34-TE1Z	
IC7002	CK27062R	IC TC7SZ32FU	
J1902	EY11801R	JACK,USB	
J1903	EY11581R	JACK(8P)	
L0001	BA11973R	COIL	
L1801	BA00894R	COIL	For HS300A
L2001C	BA02365R	COIL	For HS300A
L2201C	BA02365R	COIL	For HS300A
L2300	BA02367R	COIL	
L2301	BA02367R	COIL	
L2302	BA02367R	COIL	
L2303	BA02337R	COIL	

L2304	BA02355R	COIL	
L2305	BA02344R	COIL	
L2306	BA02367R	COIL	
L4002	BA02367R	COIL	
L4004	BA02367R	COIL	
L4005	BA02367R	COIL	
L6200	BA02367R	COIL	
L6201	BA02367R	COIL	
L6202	BA02367R	COIL	
L6203	BA02367R	COIL	
L6204	BA02372R	COIL	
L7000	BA02371R	COIL	
L7001	BA02367R	COIL	
LD1800	CC12281R	DIODE TLRMV1020-F	For HS300A
PG0001	EA03279R	PLUG	
PG1800	EA15601R	PLUG	For HS300A
PG1801	EA15021R	PLUG	For HS300A
PG1901	EA15031R	PLUG	
PG1902	EA15033R	PLUG	
PG2001C	EA15036R	PLUG	For HS300A
PG2080C	EA16241R	PLUG	For HS300A
PG2301	EA15023R	PLUG	
PG2302	EA15033R	PLUG	
PG2700	EA15026R	PLUG	
PG4002	FU10501R	CONTACT	
PG6000	EA15023R	PLUG	
PG6001	EA02751R	PLUG	
PG7000	EA15033R	PLUG	
PG7002	EA16243R	PLUG	
PG7003	EA15607R	PLUG	
PG7004	EA15602R	PLUG	
PG7005	EA16191R	PLUG	
PG7007	EA16291R	PLUG	
Q0001	CA13501R	TRANSISTOR MCH3310-TL	
Q0002	CA14131R	TRANSISTOR MCH3408	
Q1150C	CA13472R	TRANSISTOR 2SC4626J	For HS300A
Q1302	CA14151R	TRANSISTOR 2SB1705TL	
Q1303	CA14441R	TRANSISTOR RT1N144U	
Q1401C	1323252	TRANSISTOR XP4501	For HS300A
Q1800L	CA14091R	TRANSISTOR 2SC5343E-CL	For HS300A
Q1800R	CA14091R	TRANSISTOR 2SC5343E-CL	For HS300A
Q1802	CA11373R	TRANSISTOR 2SD2345JSL	For HS300A
Q1803	CA12503R	TRANSISTOR 2SC5383	For HS300A
Q1804L	CA14091R	TRANSISTOR 2SC5343E-CL	For HS300A
Q1804R	CA14091R	TRANSISTOR 2SC5343E-CL	For HS300A
Q1806L	CA14091R	TRANSISTOR 2SC5343E-CL	For HS300A
Q1806R	CA14091R	TRANSISTOR 2SC5343E-CL	For HS300A
Q1808L	CA14091R	TRANSISTOR 2SC5343E-CL	For HS300A
Q1809L	CA14421R	TRANSISTOR RT1N241U	For HS300A
Q1809R	CA14421R	TRANSISTOR RT1N241U	For HS300A
Q2080C	CA12504R	TRANSISTOR 2SC5383	For HS300A
Q2300	CA02161R	TRANSISTOR SUT485J	
Q2301	CA14451R	TRANSISTOR 2SA1989	
Q2304	CA14441R	TRANSISTOR RT1N144U	
Q4001	CA14091R	TRANSISTOR 2SC5343E-CL	
Q6000	CA14431R	TRANSISTOR RT1P144U	
Q6200	CA14101R	TRANSISTOR MUN5214DW1T1	
Q7000	CA14441R	TRANSISTOR RT1N144U	
Q7001	CA14441R	TRANSISTOR RT1N144U	
Q7002	CA14441R	TRANSISTOR RT1N144U	
SW4001	FB10741R	SWITCH	
X4002	BL01591R	CRYSTAL	
X5001	BL12321R	CRYSTAL	

**Other Parts not listed on previous pages**

FS11091	BATTERY
FU10501R	CONTACT
FU10795R	GYRO SENSOR
FU10796R	GYRO SENSOR
GH00351	MIC
HP01731	HDD(8GB)
HP01745	LCD UNIT
HP15073	EVF ASSY
JD00634	PWB ASSY HDF
JP47381	PWB ASSY FRT-L
JP47391	PWB ASSY GSL-L
JP47401	PWB ASSY LMF-L
JP47411	PWB ASSY AVJ-L
JP54671	PWB ASSY MAN-HB
KQ11581	LENS ASSY
MC10623	HEAT SINK
MN20851	CUSHION
MS10812	SHEET
NA35851	FRAME TOP
NA35951	FRAME SDL
NA36032	PLATE GROUND(L)
NA82971	GROUND PLATE
NJ13441	HOLDER JACK
NX28691	FRAME LENS
NX28881	LOCK UNIT
NX30713	FULCRUM ASSY
NX31211	DAMPER(HDD)
QD42734	COVER(L)
QD42764	CASE REAR
QD42773	CASE SIDE L
QD42843	CASE FRONT
QD42862	CASE LCD(B)
QD54725	CASE LCD(U)
QD55961	CASE SIDE R
QR68132	OPERATING GUIDE
QX01343	CUP EYE
QX01351	HOOD
QX01382	COVER ADJUSTMENT
QX01391	CAP LENS
QX01744	COVER DECORATION
QX18814	COVER LENS
QX19152	COVER TOP
SG43831	BOX CARTON
SP22471	CUSHION
TS16758	STRAP SHOLDER
TS19401	AC ADAPTOR(DZ-ACS3)
UA00263	DVD DRIVE ASSY(PC6K
UE18183	SENSOR ASSY
UE26921	CASE(L)ASSY

## F

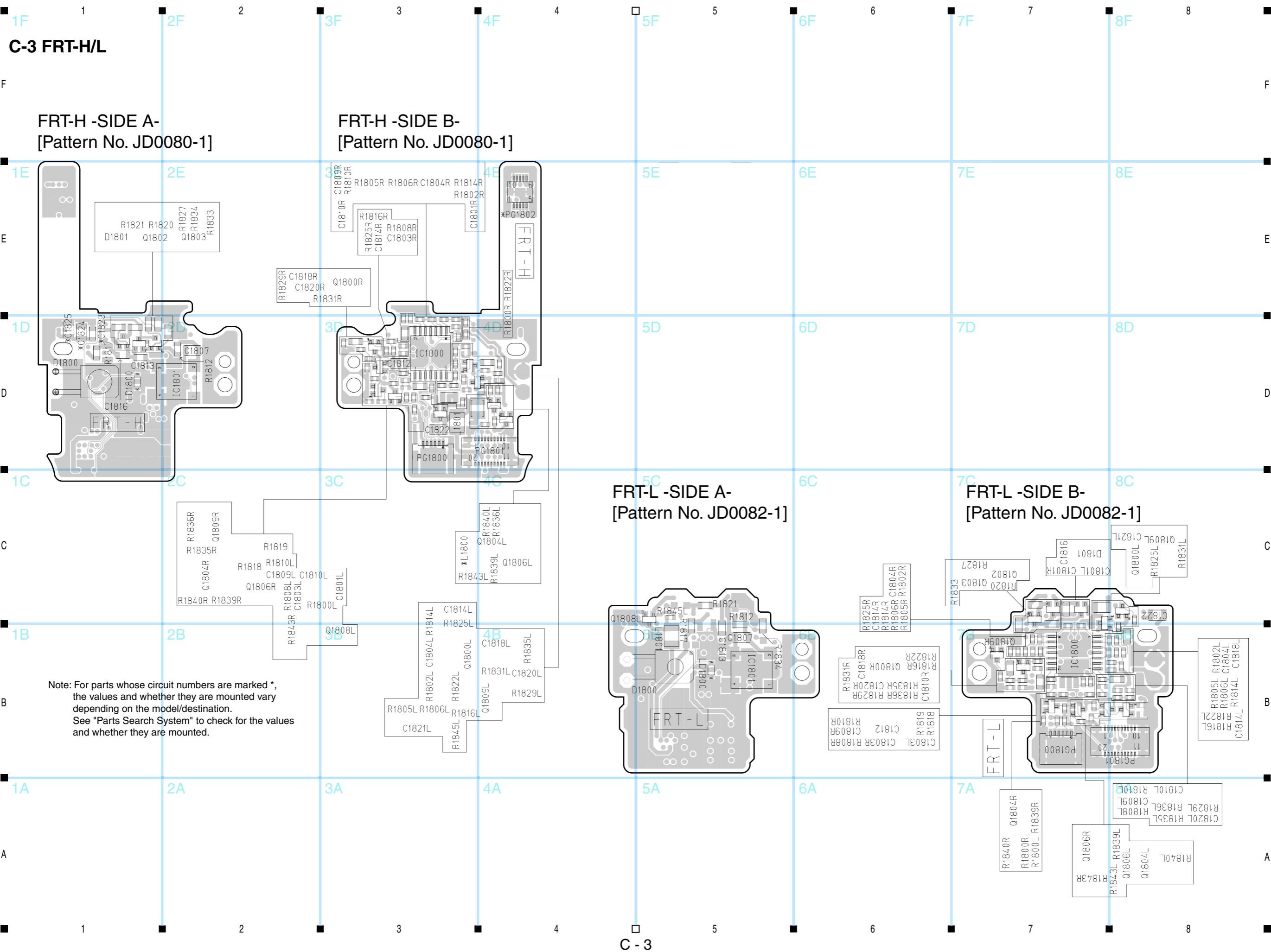


## F

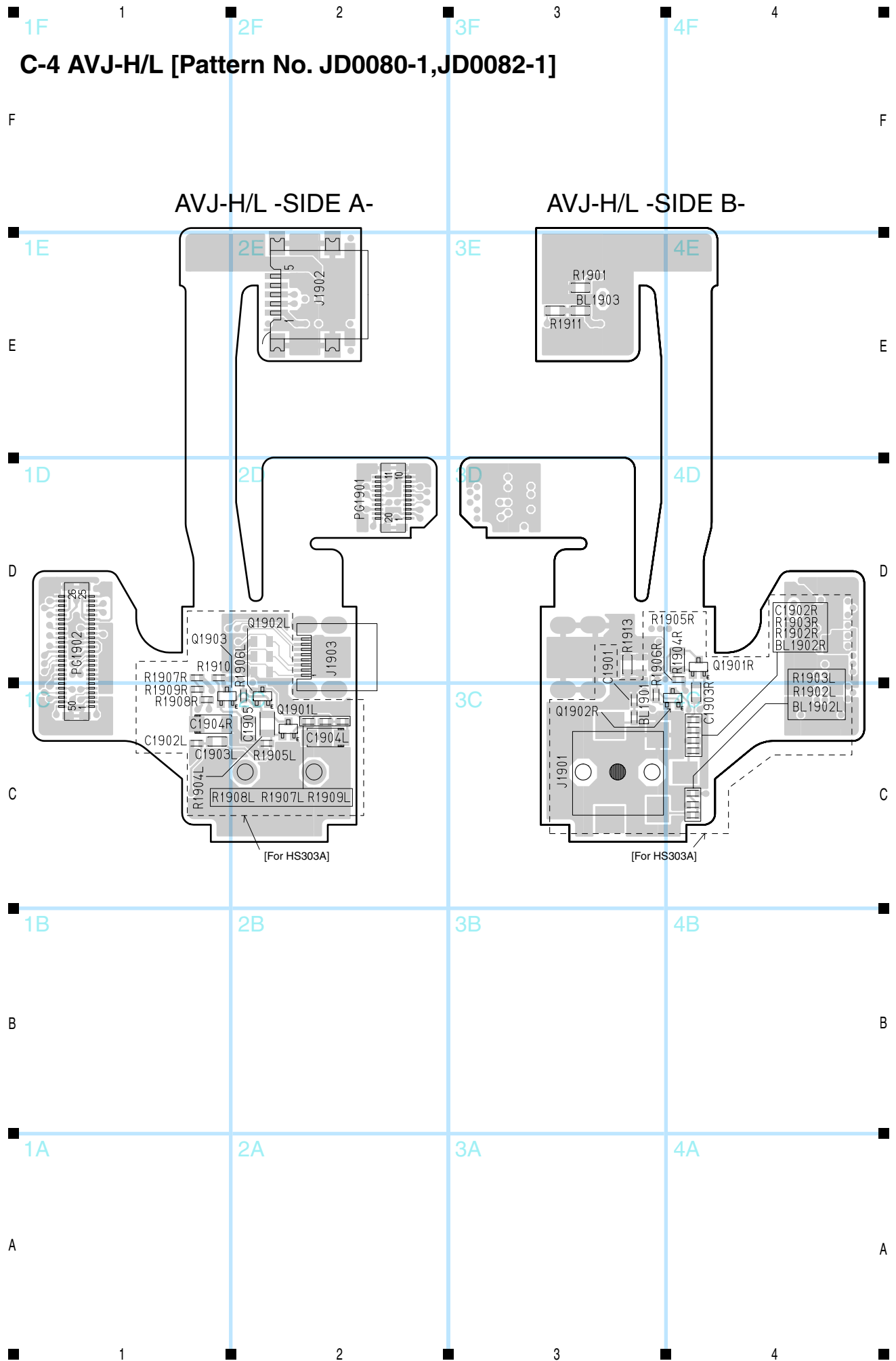


△





# **C-4 AVJ-H/L [Pattern No. JD0080-1,JD0082-1]**



1F

1

2F

2

3F

3

4F

4

C-5 LMF-H/L [Pattern No. JD0080-1, JD0082-1]

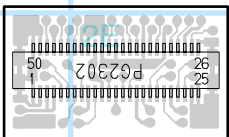
F

F

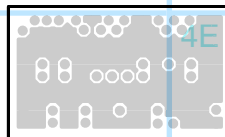
LMF-H/L -SIDE A-

LMF-H/L -SIDE B-

1E



3E



E

E

1D

2D

3D

4D

D

D

1C

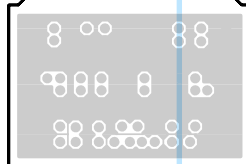
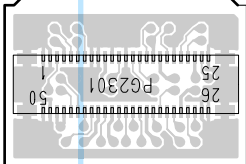
2C

3C

4C

C

C



1B

2B

3B

4B

B

B

1A

2A

3A

4A

A

A

1

2

3

4

1F

1

2F

2

3F

3

4F

4

# C-6 SHE-H (For HS303A) [Pattern No. JD0080-1]

F

F

1E

2E

3E

4E

SHE-H -SIDE A-

SHE-H -SIDE B-

E

E

1D

2D

3D

4D

D

D

1C

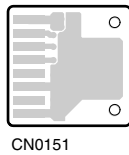
2C

3C

4C

C

C



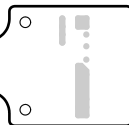
CN0151

SHE-H

CG0151



H-3HS



1B

2B

3B

4B

B

B

1A

2A

3A

4A

A

A

1

2

3

4

C - 6

**C-7 MAN [Pattern No. JA0716-4]**

**MAN -SIDE A-**

**MAN -SIDE B-**

Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination. See "Parts Search System" to check for the values and whether they are mounted.

**C-7 MAN [Pattern No. JA0716-4]**

**MAN -SIDE A-**

**MAN -SIDE B-**

Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination. See "Parts Search System" to check for the values and whether they are mounted.

**C-7 MAN [Pattern No. JA0716-4]**

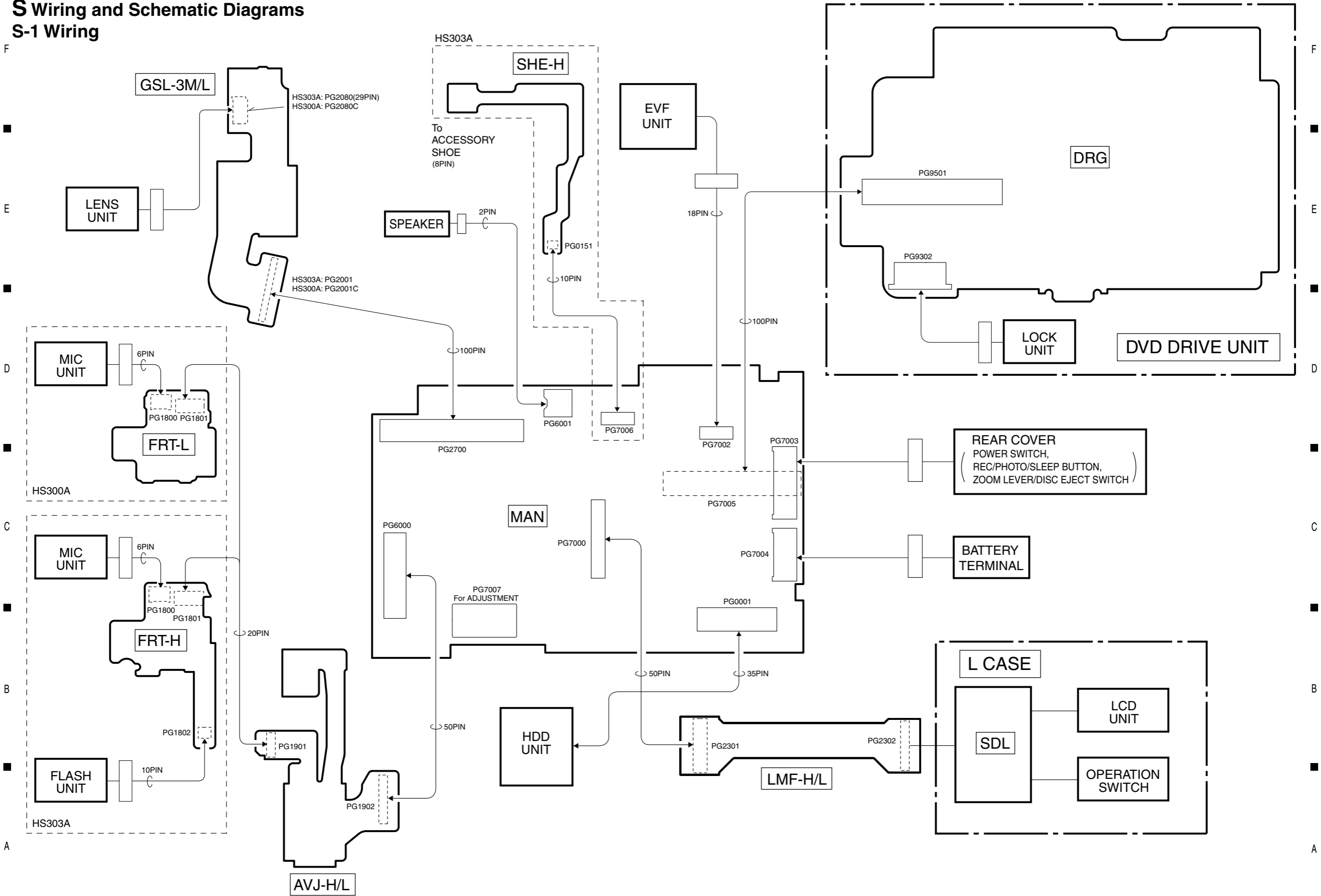
**MAN -SIDE A-**

**MAN -SIDE B-**

Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination. See "Parts Search System" to check for the values and whether they are mounted.

S Wiring and Schematic Diagrams

S-1 Wiring



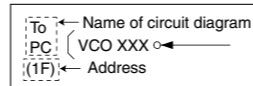
[illegible]

One voltage : PB or REC mode.  
Two voltages : PB and (REC) mode.

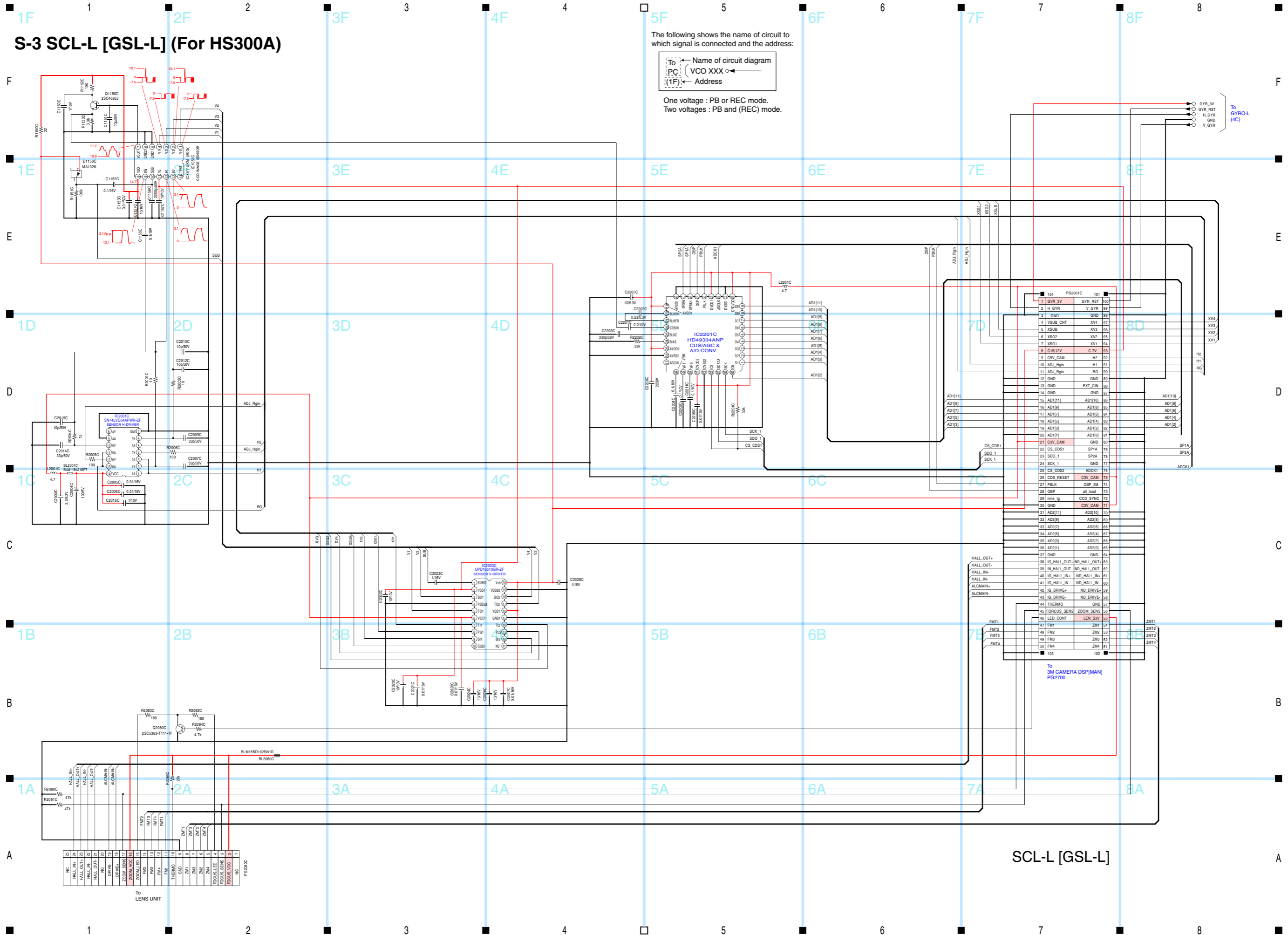
S - 2

# S-3 SCL-L [GSL-L] (For HS300A)

The following shows the name of circuit to which signal is connected and the address:



One voltage : PB or REC mode.  
Two voltages : PB and (REC) mode.



SCL-L [GSL-L]



Figure 1: Schematic diagram of the experimental setup for the study of the effect of the magnetic field on the growth of the C1411 cells. The diagram shows a cross-section of a cell culture dish with a central well. The well is divided into four quadrants labeled 1B, 2B, 3B, and 4B. A magnetic field (B) is applied to the central well. The distance from the center of the well to the edge of the dish is 100 mm. The diameter of the central well is 680K ± 1%. The C1411 cells are grown in the central well.



**S-5 GYRO-L [GSL-L] (For HS300A)**

The following shows the name of circuit to which signal is connected and the address:

To	Name of circuit diagram
PC	VCO XXX
(1F)	Address

**GYRO-L [GSL-L]**

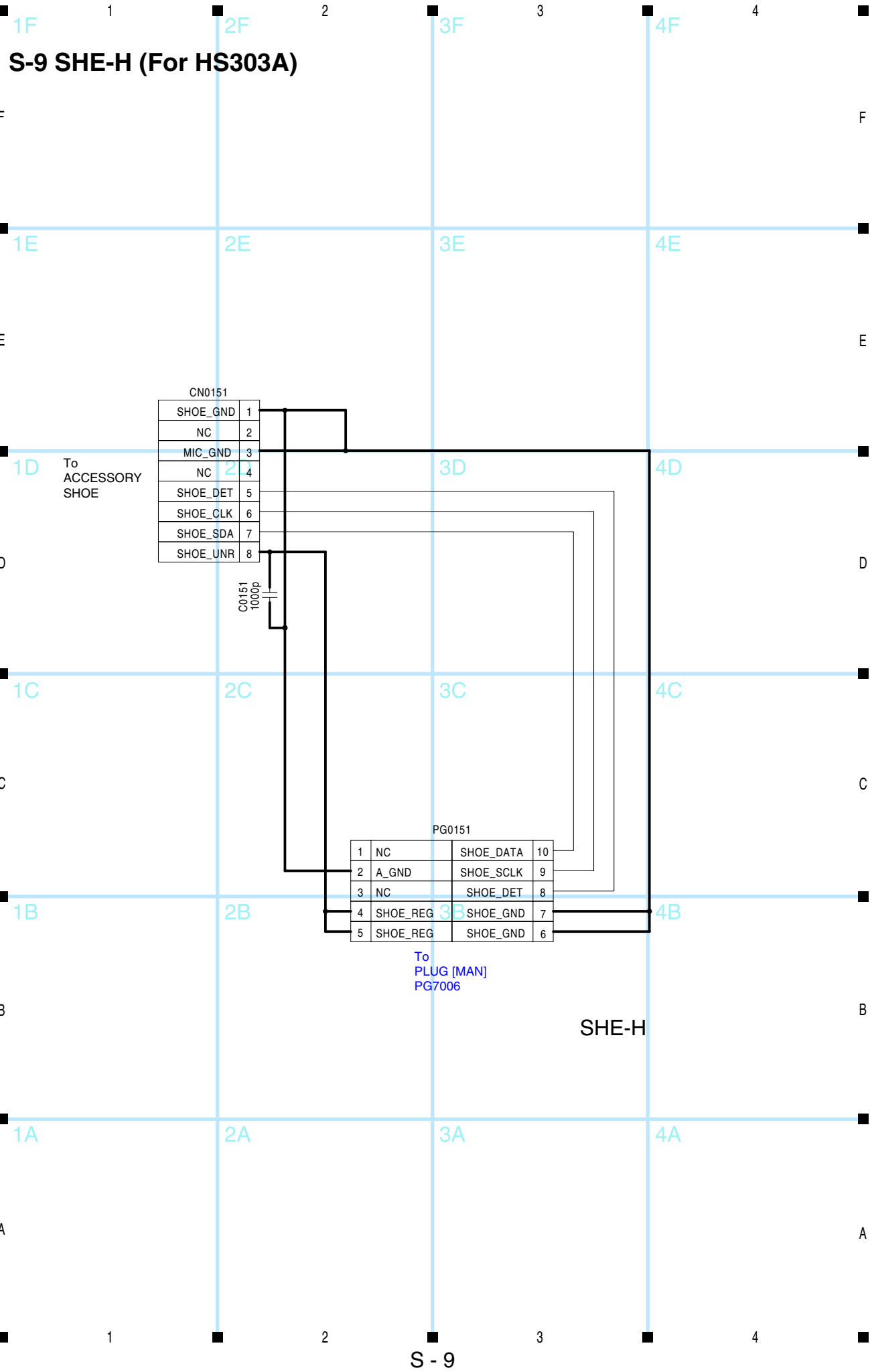
To ← Name of circuit diagram  
 PC { VCO XXX ○ ←  
 (1F) ← Address

S - 5



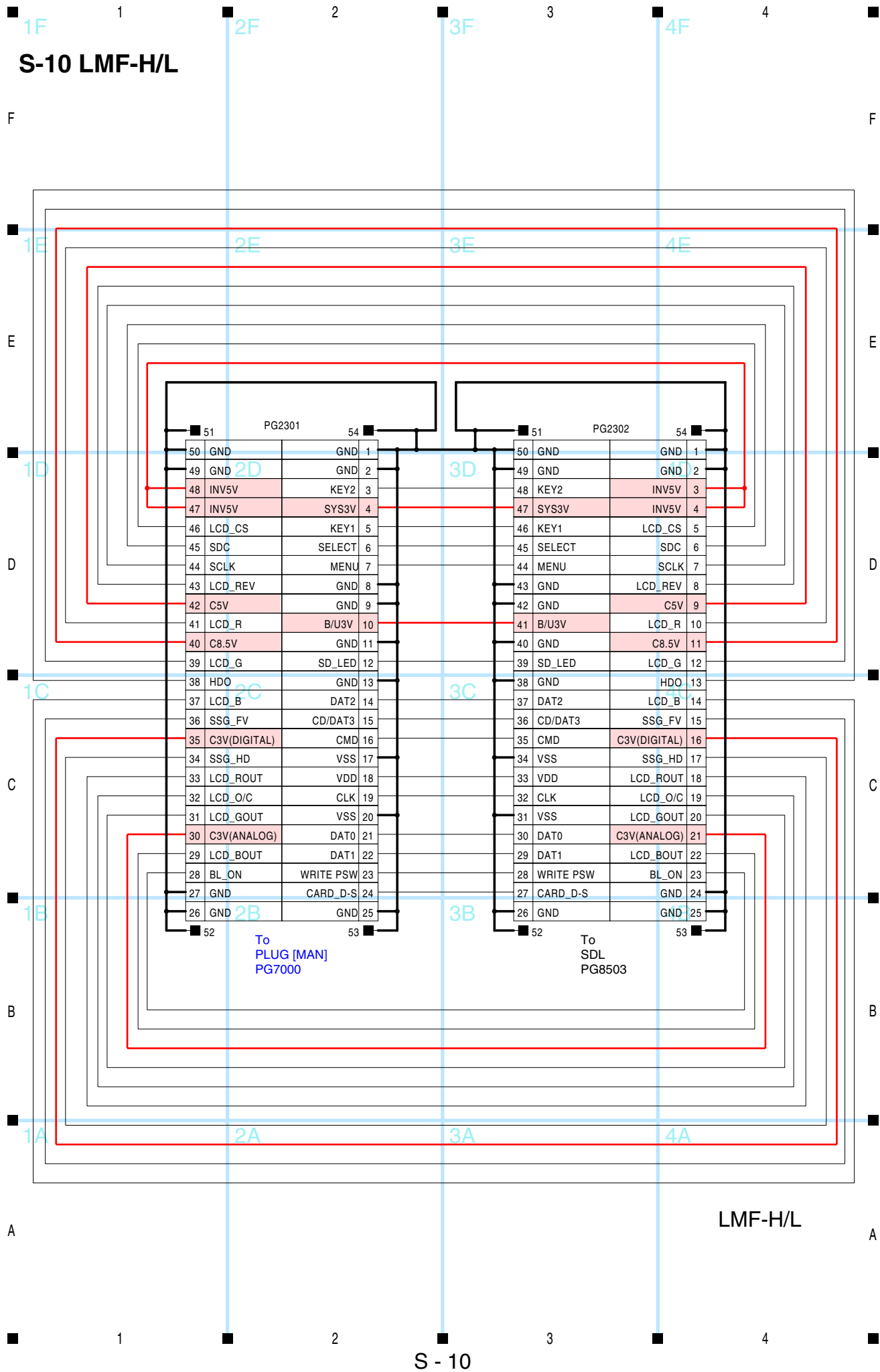
[illegible]





# S-9 SHE-H (For HS303A)

# S-10 LMF-H/L



**S-11 CAMERA DSP [MAN]**

The following shows the name of circuit to which signal is connected and the address:

To PC (1F) ← Name of circuit diagram  
 VCO XXX ← Address

Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination. See "Parts Search System" to check for the values and whether they are mounted.

**IC2303 TWINKLE-D**

1F 2F 3F 4F 5F 6F 7F 8F

1E 2E 3E 4E 5E 6E 7E 8E

1D 2D 3D 4D 5D 6D 7D 8D

1C 2C 3C 4C 5C 6C 7C 8C

1B 2B 3B 4B 5B 6B 7B 8B

1A 2A 3A 4A 5A 6A 7A 8A

1 2 3 4 5 6 7 8

**CAMERA DSP [MAN]**

To ← Name of circuit diagram  
 PC { VCO XXX ○ ←  
 (1F) ← Address

To  
CODEC  
(1D)

S - 11

**S-12 3M CAMERA DSP [MAN]**

The following shows the name of circuit to which signal is connected and the address:

To PC (1F) ← Name of circuit diagram  
VCO XXX ← Address

Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination. See "Parts Search System" to check for the values and whether they are mounted.

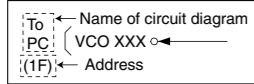
**3M CAMERA DSP [MAN]**

**S - 12**

5F
6F

Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination.  
 See "Parts Search System" to check for the values and whether they are mounted.

**F** The following shows the name of circuit to which signal is connected and the address:



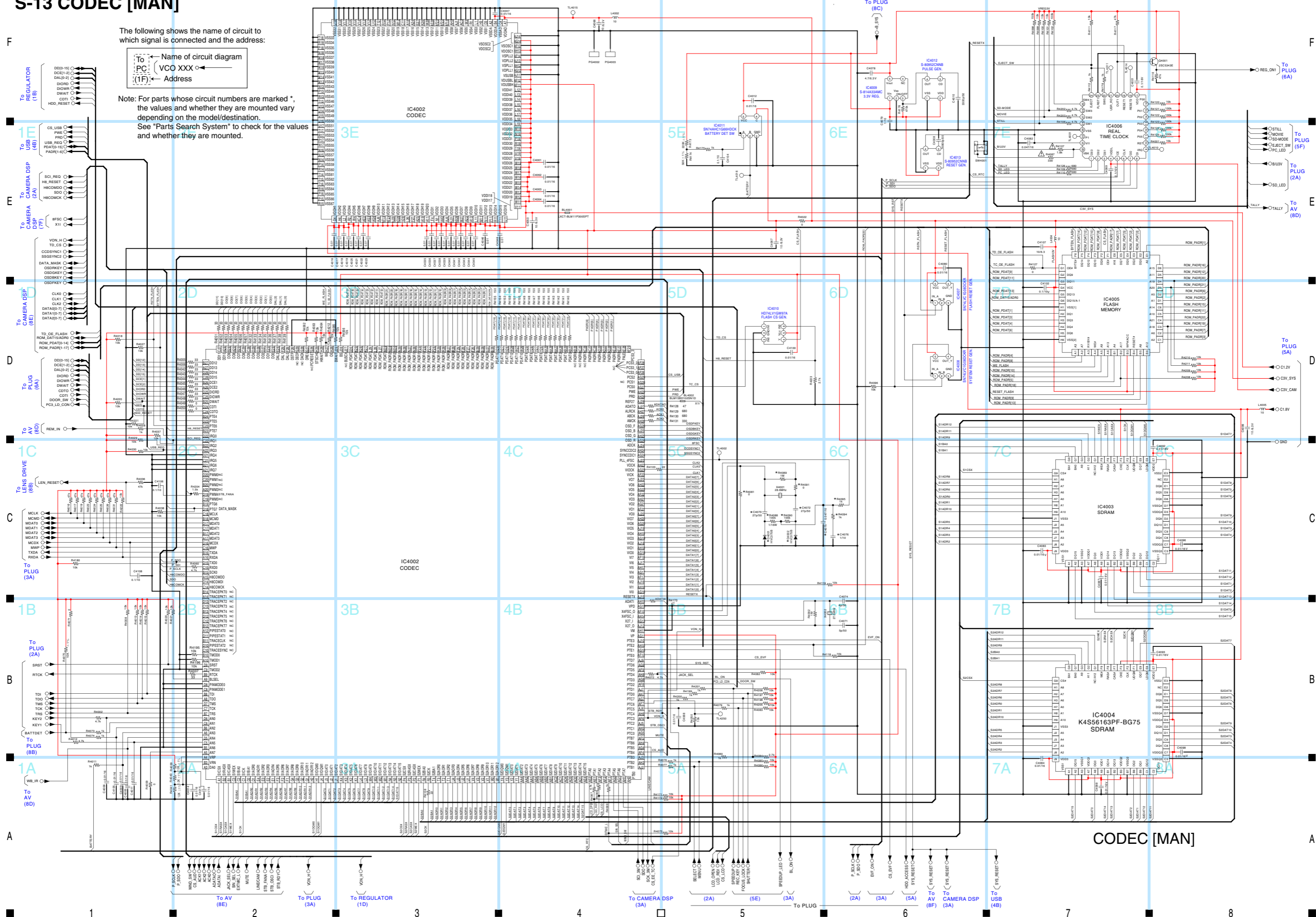
### 3M CAMERA DSP [MAN]

Diagram illustrating a 1D lattice with 8 sites. The sites are numbered 1 through 8. The occupancy of each site is indicated by a black square (occupied) or a white square (empty). The fermion number (F) is labeled below each site.

Site	Occupancy	Fermion Number (F)
1	Occupied	1F
2	Occupied	2F
3	Occupied	3F
4	Occupied	4F
5	Empty	5F
6	Occupied	6F
7	Occupied	7F
8	Occupied	8F

To ← Name of circuit diagram  
 PC { VCO XXX ←  
 (1F) ← Address

Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination.  
See "Parts Search System" to check for the values and whether they are mounted.



**S-14 PLUG [MAN]**

The following shows the name of circuit to which signal is connected and the address:

To PC (1F) ← Name of circuit diagram  
VCO XXX ← Address

Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination. See "Parts Search System" to check for the values and whether they are mounted.

One voltage : PB or REC mode.  
Two voltages : PB and (REC) mode.

**PG7000**

PG7000 is a 54-pin connector. The following table shows the pin connections:

Pin	Signal	Pin	Signal
1	GND	28	BL_ON
2	GND	29	SD
3	KEY2	30	RD
4	KEY1	31	SRST
5	KEY2	32	TMS
6	SELECT	33	TDO
7	SELECT	34	TRS
8	SD_LED	35	TCK
9	MDAT2	36	TCD
10	MDAT3	37	TCD
11	MDAT0	38	TCD
12	MDAT1	39	TCD
13	MWP	40	TCD
14	MCDX	41	TCD
15	GND	42	TCD
16	GND	43	TCD
17	GND	44	TCD
18	GND	45	TCD
19	GND	46	TCD
20	GND	47	TCD
21	GND	48	TCD
22	GND	49	TCD
23	GND	50	TCD
24	GND	51	TCD
25	GND	52	TCD
26	GND	53	TCD
27	GND	54	TCD

**PG7005 To DVD DRIVE UNIT**

PG7005 is a 50-pin connector. The following table shows the pin connections:

Pin	Signal	Pin	Signal
1	GND(CAM)	26	VRDC2NREF
2	DD7	27	GND(CAM)
3	DD8	28	GND(CAM)
4	DD9	29	GND(CAM)
5	DD10	30	GND(CAM)
6	DD11	31	GND(CAM)
7	DD12	32	GND(CAM)
8	DD13	33	GND(CAM)
9	DD14	34	GND(CAM)
10	DD15	35	GND(CAM)
11	GND(CAM)	36	GND(CAM)
12	DMARQ	37	GND(CAM)
13	DIOWR	38	GND(CAM)
14	DIOR	39	GND(CAM)
15	IOVDY	40	GND(CAM)
16	INTRQ	41	GND(CAM)
17	DA1	42	GND(CAM)
18	DA2	43	GND(CAM)
19	CS0	44	GND(CAM)
20	DASP	45	GND(CAM)
21	HEATRUM	46	GND(CAM)
22	ACC_LED	47	GND(CAM)
23	GND(CAM)	48	GND(CAM)
24	PON_FACT	49	GND(CAM)
25	CV_OPEN	50	GND(CAM)

**PG7006**

PG7006 is a 5-pin connector. The following table shows the pin connections:

Pin	Signal
1	SHOE_DATA
2	SHOE_SCLK
3	SHOE_DET
4	SHOE_REG
5	SHOE_REG

**PG7007**

PG7007 is a 34-pin connector. The following table shows the pin connections:

Pin	Signal	Pin	Signal
1	N.C.	17	N.C.
2	RXDA	18	N.C.
3	RTCK	19	N.C.
4	TXDA	20	N.C.
5	GND	21	N.C.
6	VON_H	22	N.C.
7	CSV_SYS	23	N.C.
8	V_I/O	24	N.C.
9	GND	25	N.C.
10	VON_H	26	N.C.
11	LCD_HDO	27	N.C.
12	LCD_BOUT	28	N.C.
13	LCD_GOUT	29	N.C.
14	LCD_ROUT	30	N.C.
15	N.C.	31	N.C.
16	N.C.	32	N.C.
17	N.C.	33	N.C.
18	N.C.	34	N.C.

**PG7004**

PG7004 is a 14-pin connector. The following table shows the pin connections:

Pin	Signal
1	+B
2	+B
3	+B
4	+B
5	+B
6	BATTERY TEMP
7	BATT/ADP
8	GND
9	GND
10	GND
11	GND
12	GND
13	GND
14	GND

**PLUG [MAN]**

One voltage : PB or REC mode.  
Two voltages : PB and (REC) mode.

*PG7006				
10	SHOE_DATA		NC	1
9	SHOE_SCLK		GND	2
8	SHOE_DET		NC	3
7	SHOE_GND	SHOE_REG		4
6	SHOE_GND	SHOE_REG		5

10

S - 14

**S-15 USB [MAN]**

The following shows the name of circuit to which signal is connected and the address:

To PC (1F) ← Name of circuit diagram  
VCO XXX ← Address

Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination. See "Parts Search System" to check for the values and whether they are mounted.

The diagram illustrates the internal circuitry of the S-15 USB [MAN] module. The central component is the **IC5001 M66592WG USB DRIVER**. It is connected to various external components and systems:

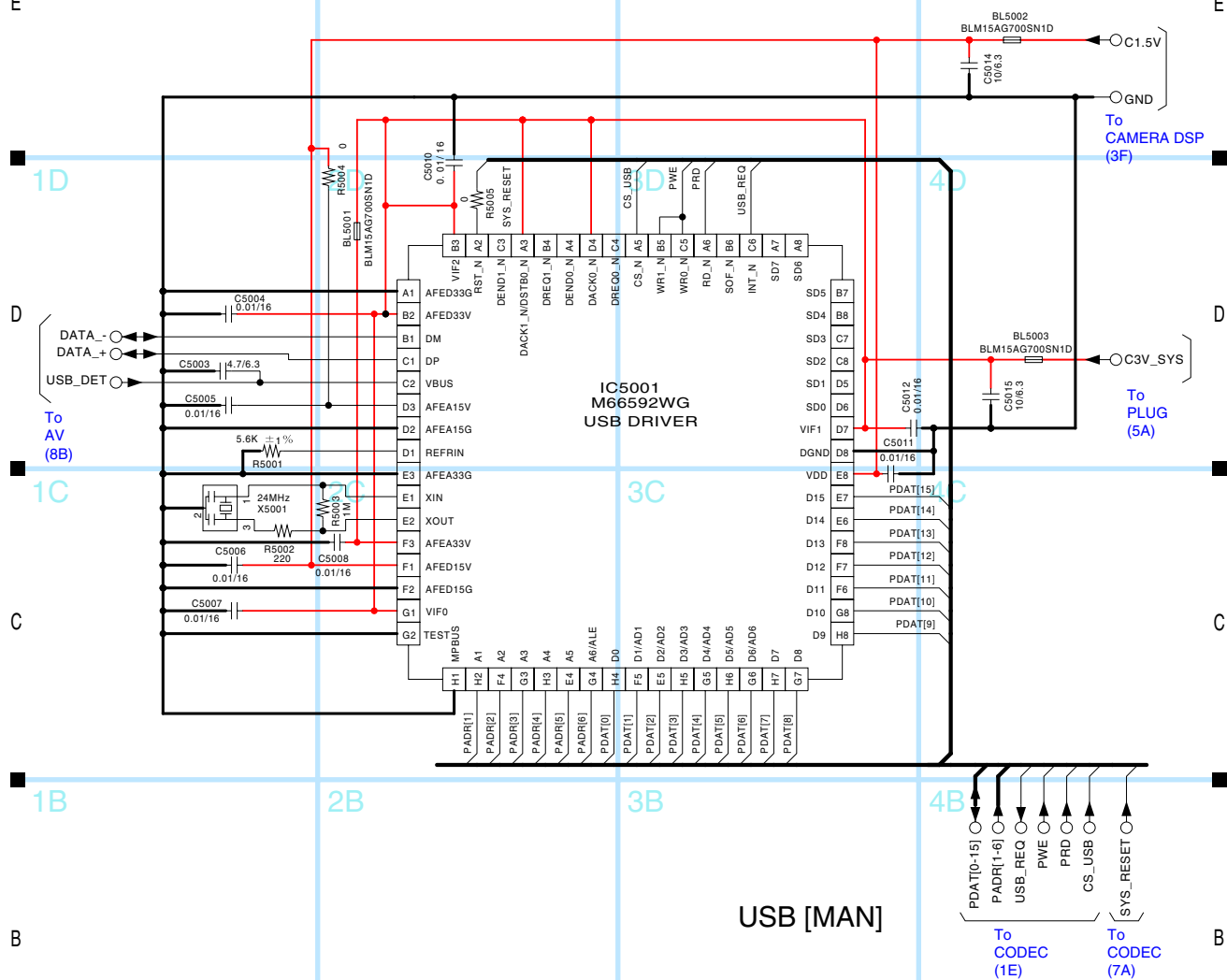
- Power and Ground:**
  - C1.5V:** Connected to pin B7 (SD5) via BL5002 (BLM15AG700SN1D) and C5014 (10/6.3).
  - GND:** Connected to pin B8 (SD4) and pin D8 (VIF1).
  - C3V\_SYS:** Connected to pin D7 (VIF1) via BL5003 (BLM15AG700SN1D) and C5015 (10/6.3).
- Control and Data Signals:**
  - DATA\_ and DATA\_+:** Connected to pins B1 (DM) and B2 (AFED33V) via C5004 (0.01/16).
  - USB\_DET:** Connected to pin C1 (DP) via C5003 (4.7/6.3) and C5005 (0.01/16).
  - 5.6K ±1%:** Connected to pin D2 (AFEA15V) via R5001.
  - 24MHz X5001:** Connected to pins E1 (XIN) and E2 (XOUT) via R5008 (1M) and C5006 (0.01/16).
  - C5007 (0.01/16):** Connected to pin G1 (VIF0).
  - C5008 (0.01/16):** Connected to pin F1 (AFED15V).
  - C5009 (0.01/16):** Connected to pin F2 (AFED15G).
- External Connections:**
  - To CAMERA DSP (3F):** Connected to pins B7 (SD5) and B8 (SD4).
  - To PLUG (5A):** Connected to pins D7 (VIF1) and D8 (VIF1).
  - To CODEC (1E):** Connected to pins PDAT10-15 (G7, H7, D7, C7, B7).
  - To CODEC (7A):** Connected to pins PADR1-6 (H1, H2, H3, H4, H5, H6).

The IC5001 M66592WG USB DRIVER has the following pins and connections:

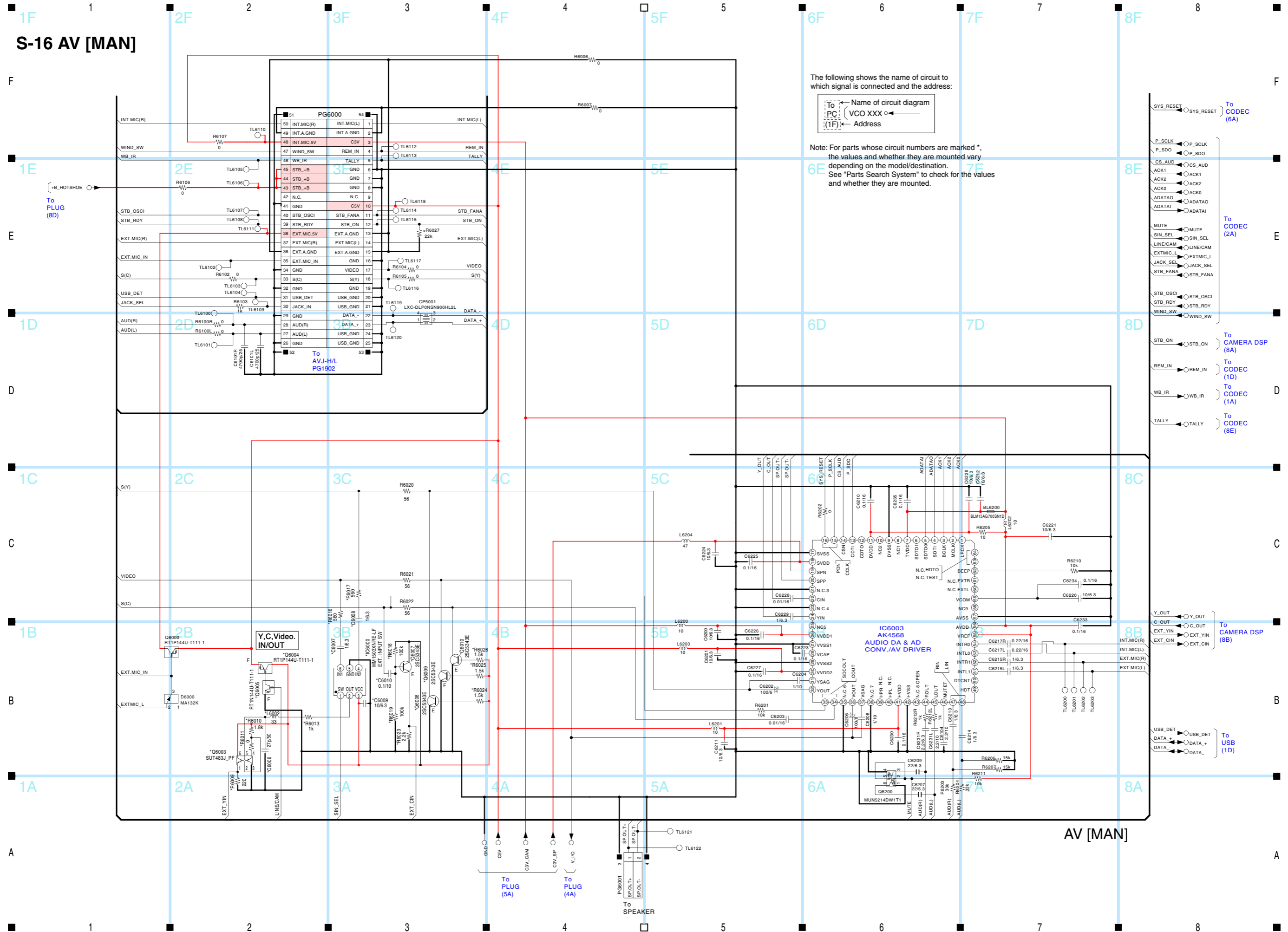
- Pin 1 (MPBUS):** Connected to pin H1 (PADR1).
- Pin 2 (TEST):** Connected to pin G2 (PADR2).
- Pin 3 (AFED33G):** Connected to pin B2 (AFED33V).
- Pin 4 (DM):** Connected to pin B1 (DM).
- Pin 5 (DP):** Connected to pin C1 (DP).
- Pin 6 (VBUS):** Connected to pin D1 (REFRIN).
- Pin 7 (AFEA15V):** Connected to pin D2 (AFEA15V).
- Pin 8 (AFEA15G):** Connected to pin D3 (AFEA15G).
- Pin 9 (AFEA33G):** Connected to pin E3 (AFEA33G).
- Pin 10 (XIN):** Connected to pin E1 (XIN).
- Pin 11 (XOUT):** Connected to pin E2 (XOUT).
- Pin 12 (AFEA33V):** Connected to pin F3 (AFEA33V).
- Pin 13 (AFED15V):** Connected to pin F1 (AFED15V).
- Pin 14 (AFED15G):** Connected to pin F2 (AFED15G).
- Pin 15 (VIF0):** Connected to pin G1 (VIF0).
- Pin 16 (TEST):** Connected to pin G2 (TEST).
- Pin 17 (MPBUS):** Connected to pin H1 (PADR1).
- Pin 18 (TEST):** Connected to pin G2 (TEST).
- Pin 19 (AFED33G):** Connected to pin B2 (AFED33V).
- Pin 20 (DM):** Connected to pin B1 (DM).
- Pin 21 (DP):** Connected to pin C1 (DP).
- Pin 22 (VBUS):** Connected to pin D1 (REFRIN).
- Pin 23 (AFEA15V):** Connected to pin D2 (AFEA15V).
- Pin 24 (AFEA15G):** Connected to pin D3 (AFEA15G).
- Pin 25 (AFEA33G):** Connected to pin E3 (AFEA33G).
- Pin 26 (XIN):** Connected to pin E1 (XIN).
- Pin 27 (XOUT):** Connected to pin E2 (XOUT).
- Pin 28 (AFEA33V):** Connected to pin F3 (AFEA33V).
- Pin 29 (AFED15V):** Connected to pin F1 (AFED15V).
- Pin 30 (AFED15G):** Connected to pin F2 (AFED15G).
- Pin 31 (VIF0):** Connected to pin G1 (VIF0).
- Pin 32 (TEST):** Connected to pin G2 (TEST).
- Pin 33 (MPBUS):** Connected to pin H1 (PADR1).
- Pin 34 (TEST):** Connected to pin G2 (TEST).
- Pin 35 (AFED33G):** Connected to pin B2 (AFED33V).
- Pin 36 (DM):** Connected to pin B1 (DM).
- Pin 37 (DP):** Connected to pin C1 (DP).
- Pin 38 (VBUS):** Connected to pin D1 (REFRIN).
- Pin 39 (AFEA15V):** Connected to pin D2 (AFEA15V).
- Pin 40 (AFEA15G):** Connected to pin D3 (AFEA15G).
- Pin 41 (AFEA33G):** Connected to pin E3 (AFEA33G).
- Pin 42 (XIN):** Connected to pin E1 (XIN).
- Pin 43 (XOUT):** Connected to pin E2 (XOUT).
- Pin 44 (AFEA33V):** Connected to pin F3 (AFEA33V).
- Pin 45 (AFED15V):** Connected to pin F1 (AFED15V).
- Pin 46 (AFED15G):** Connected to pin F2 (AFED15G).
- Pin 47 (VIF0):** Connected to pin G1 (VIF0).
- Pin 48 (TEST):** Connected to pin G2 (TEST).
- Pin 49 (MPBUS):** Connected to pin H1 (PADR1).
- Pin 50 (TEST):** Connected to pin G2 (TEST).
- Pin 51 (AFED33G):** Connected to pin B2 (AFED33V).
- Pin 52 (DM):** Connected to pin B1 (DM).
- Pin 53 (DP):** Connected to pin C1 (DP).
- Pin 54 (VBUS):** Connected to pin D1 (REFRIN).
- Pin 55 (AFEA15V):** Connected to pin D2 (AFEA15V).
- Pin 56 (AFEA15G):** Connected to pin D3 (AFEA15G).
- Pin 57 (AFEA33G):** Connected to pin E3 (AFEA33G).
- Pin 58 (XIN):** Connected to pin E1 (XIN).
- Pin 59 (XOUT):** Connected to pin E2 (XOUT).
- Pin 60 (AFEA33V):** Connected to pin F3 (AFEA33V).
- Pin 61 (AFED15V):** Connected to pin F1 (AFED15V).
- Pin 62 (AFED15G):** Connected to pin F2 (AFED15G).
- Pin 63 (VIF0):** Connected to pin G1 (VIF0).
- Pin 64 (TEST):** Connected to pin G2 (TEST).
- Pin 65 (MPBUS):** Connected to pin H1 (PADR1).
- Pin 66 (TEST):** Connected to pin G2 (TEST).
- Pin 67 (AFED33G):** Connected to pin B2 (AFED33V).
- Pin 68 (DM):** Connected to pin B1 (DM).
- Pin 69 (DP):** Connected to pin C1 (DP).
- Pin 70 (VBUS):** Connected to pin D1 (REFRIN).
- Pin 71 (AFEA15V):** Connected to pin D2 (AFEA15V).
- Pin 72 (AFEA15G):** Connected to pin D3 (AFEA15G).
- Pin 73 (AFEA33G):** Connected to pin E3 (AFEA33G).
- Pin 74 (XIN):** Connected to pin E1 (XIN).
- Pin 75 (XOUT):** Connected to pin E2 (XOUT).
- Pin 76 (AFEA33V):** Connected to pin F3 (AFEA33V).
- Pin 77 (AFED15V):** Connected to pin F1 (AFED15V).
- Pin 78 (AFED15G):** Connected to pin F2 (AFED15G).
- Pin 79 (VIF0):** Connected to pin G1 (VIF0).
- Pin 80 (TEST):** Connected to pin G2 (TEST).
- Pin 81 (MPBUS):** Connected to pin H1 (PADR1).
- Pin 82 (TEST):** Connected to pin G2 (TEST).
- Pin 83 (AFED33G):** Connected to pin B2 (AFED33V).
- Pin 84 (DM):** Connected to pin B1 (DM).
- Pin 85 (DP):** Connected to pin C1 (DP).
- Pin 86 (VBUS):** Connected to pin D1 (REFRIN).
- Pin 87 (AFEA15V):** Connected to pin D2 (AFEA15V).
- Pin 88 (AFEA15G):** Connected to pin D3 (AFEA15G).
- Pin 89 (AFEA33G):** Connected to pin E3 (AFEA33G).
- Pin 90 (XIN):** Connected to pin E1 (XIN).
- Pin 91 (XOUT):** Connected to pin E2 (XOUT).
- Pin 92 (AFEA33V):** Connected to pin F3 (AFEA33V).
- Pin 93 (AFED15V):** Connected to pin F1 (AFED15V).
- Pin 94 (AFED15G):** Connected to pin F2 (AFED15G).
- Pin 95 (VIF0):** Connected to pin G1 (VIF0).
- Pin 96 (TEST):** Connected to pin G2 (TEST).
- Pin 97 (MPBUS):** Connected to pin H1 (PADR1).
- Pin 98 (TEST):** Connected to pin G2 (TEST).
- Pin 99 (AFED33G):** Connected to pin B2 (AFED33V).
- Pin 100 (DM):** Connected to pin B1 (DM).
- Pin 101 (DP):** Connected to pin C1 (DP).
- Pin 102 (VBUS):** Connected to pin D1 (REFRIN).
- Pin 103 (AFEA15V):** Connected to pin D2 (AFEA15V).
- Pin 104 (AFEA15G):** Connected to pin D3 (AFEA15G).
- Pin 105 (AFEA33G):** Connected to pin E3 (AFEA33G).
- Pin 106 (XIN):** Connected to pin E1 (XIN).
- Pin 107 (XOUT):** Connected to pin E2 (XOUT).
- Pin 108 (AFEA33V):** Connected to pin F3 (AFEA33V).

To ← Name of circuit diagram  
 PC { VCO XXX ○ ←  
 (1F) ← Address

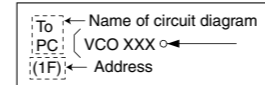
Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination. See "Parts Search System" to check for the values and whether they are mounted.



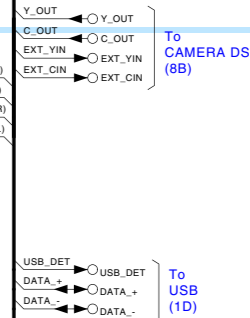
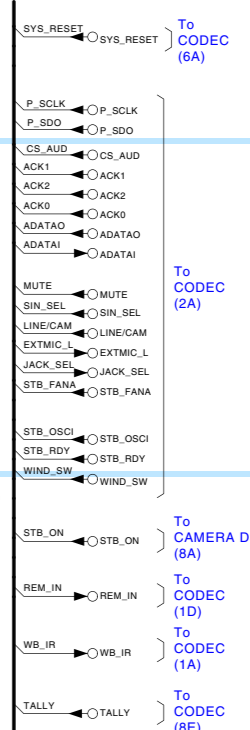
# S-16 AV [MAN]



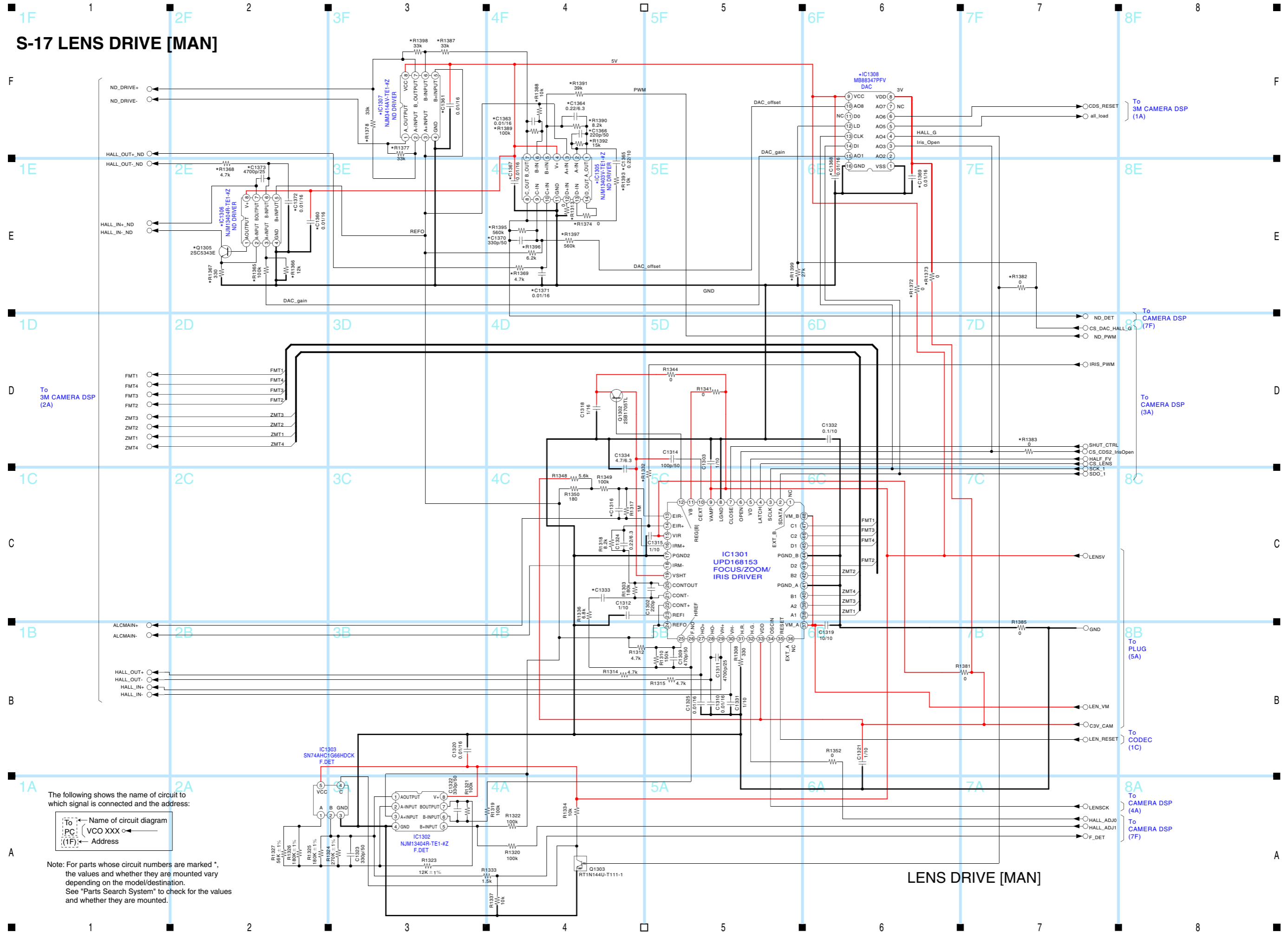
The following shows the name of circuit to which signal is connected and the address:



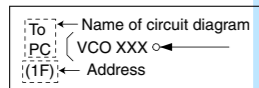
Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination. See "Parts Search System" to check for the values and whether they are mounted.



# S-17 LENS DRIVE [MAN]



The following shows the name of circuit to which signal is connected and the address:

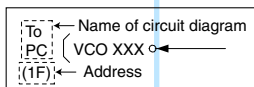


Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination. See "Parts Search System" to check for the values and whether they are mounted.

## LENS DRIVE [MAN]

# S-18 REGULATOR [MAN]

The following shows the name of circuit to which signal is connected and the address:

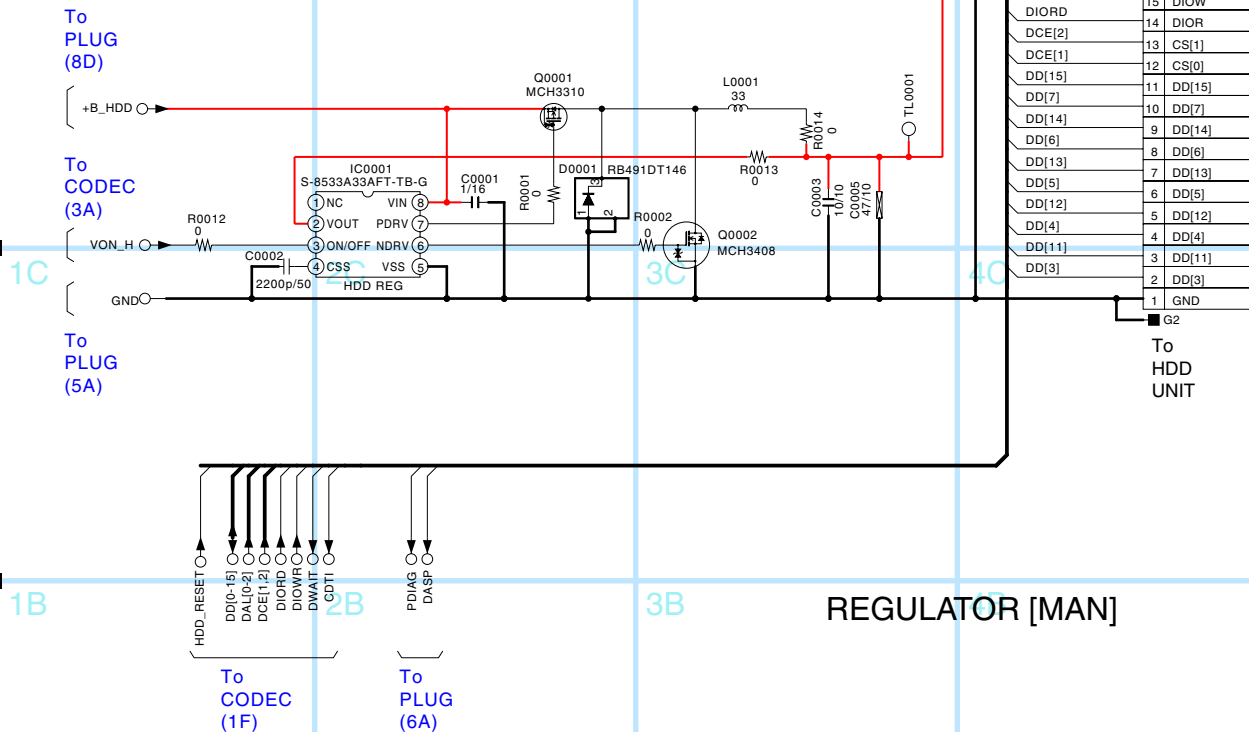


Note: For parts whose circuit numbers are marked \*, the values and whether they are mounted vary depending on the model/destination. See "Parts Search System" to check for the values and whether they are mounted.

To  
PLUG  
(8D)

To  
CODEC  
(3A)

To  
PLUG  
(5A)



## REGULATOR [MAN]

S-19 IC Block (1/2)

F

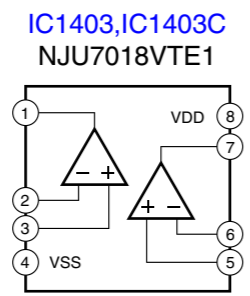
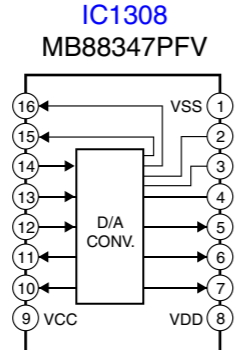
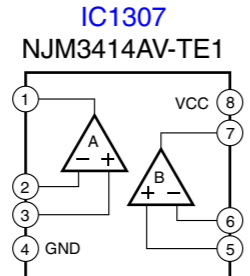
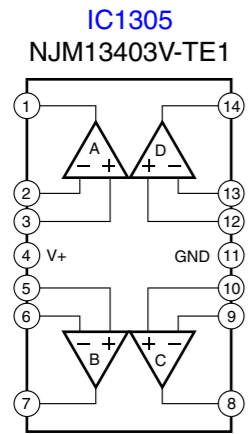
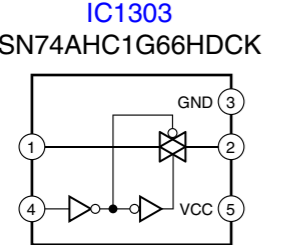
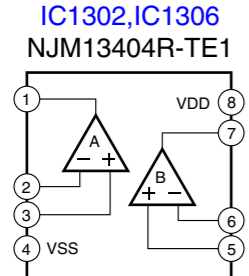
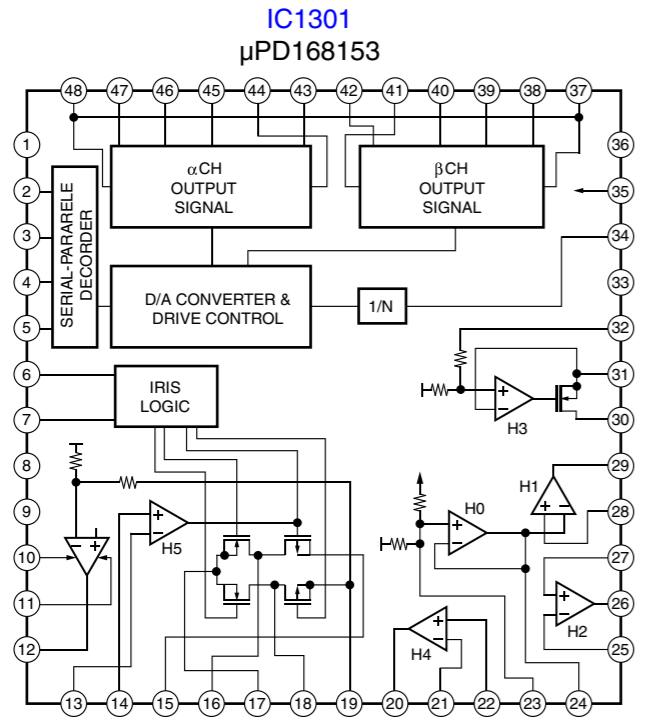
E

D

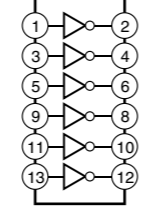
C

B

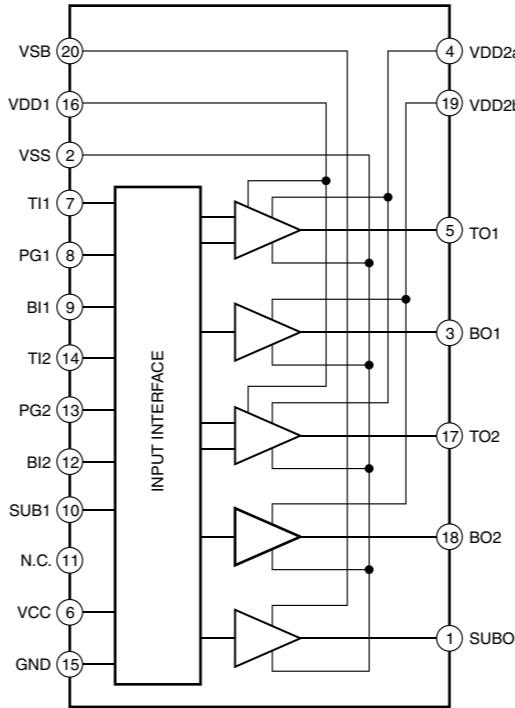
A



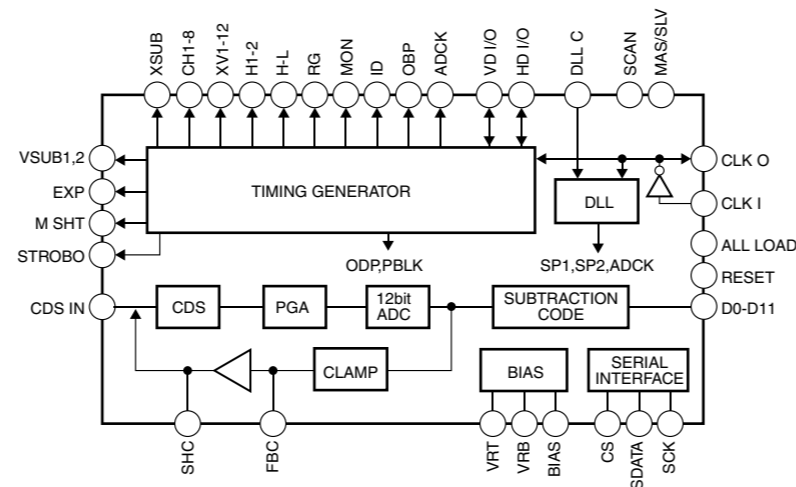
**IC2001C**  
SN74ALVC04PWR



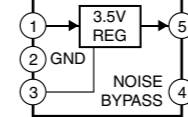
**IC2003,IC2003C,IC2004**  
UPD16510GR



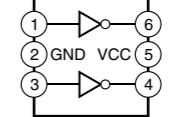
**IC2100,IC2101**  
R2A45003HGBW0



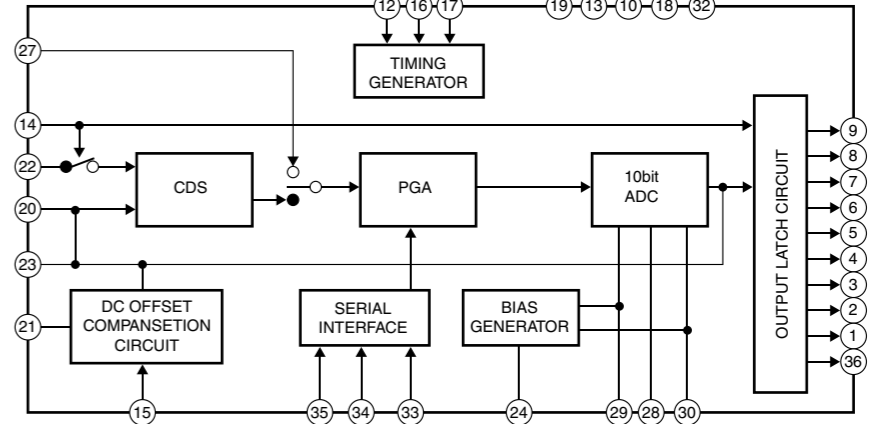
**IC2102**  
NJM2872AF35



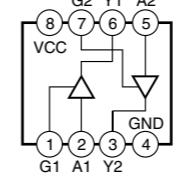
**IC2103**  
TC7PA04FU



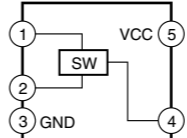
**IC2201C**  
HD49334ANP



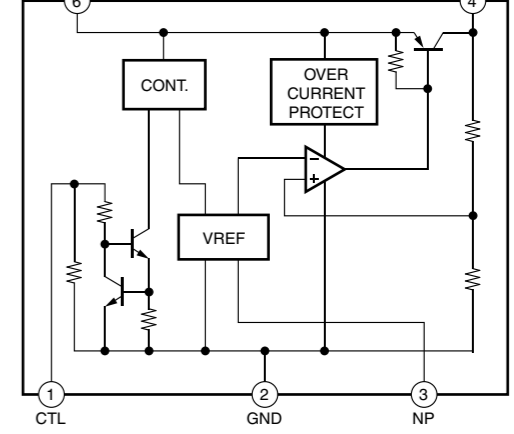
**IC2301**  
TC7W126FU



**IC4011**  
SN74AHC1G66HDCK

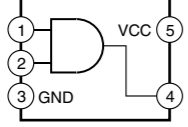


**IC2302,IC2700**  
TK11215CMC

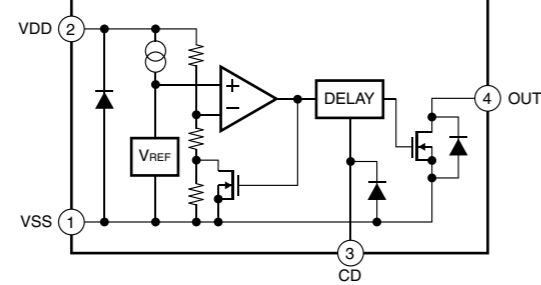


S-20 IC Block (2/2)

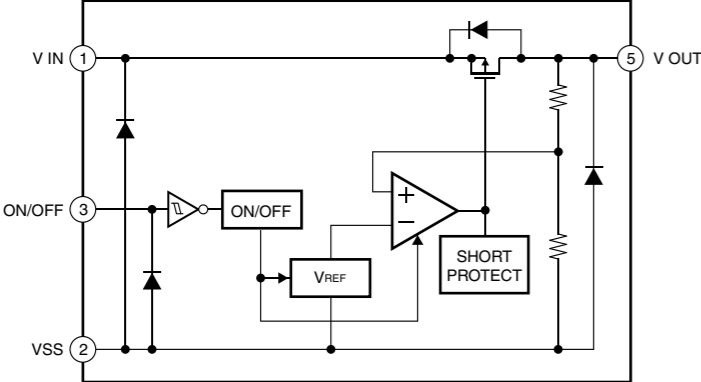
IC4007,IC4008  
SN74LVC1G08DCKR



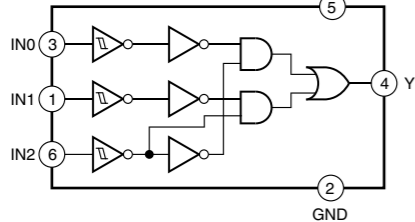
IC4012,IC4013  
S-80952CNNB



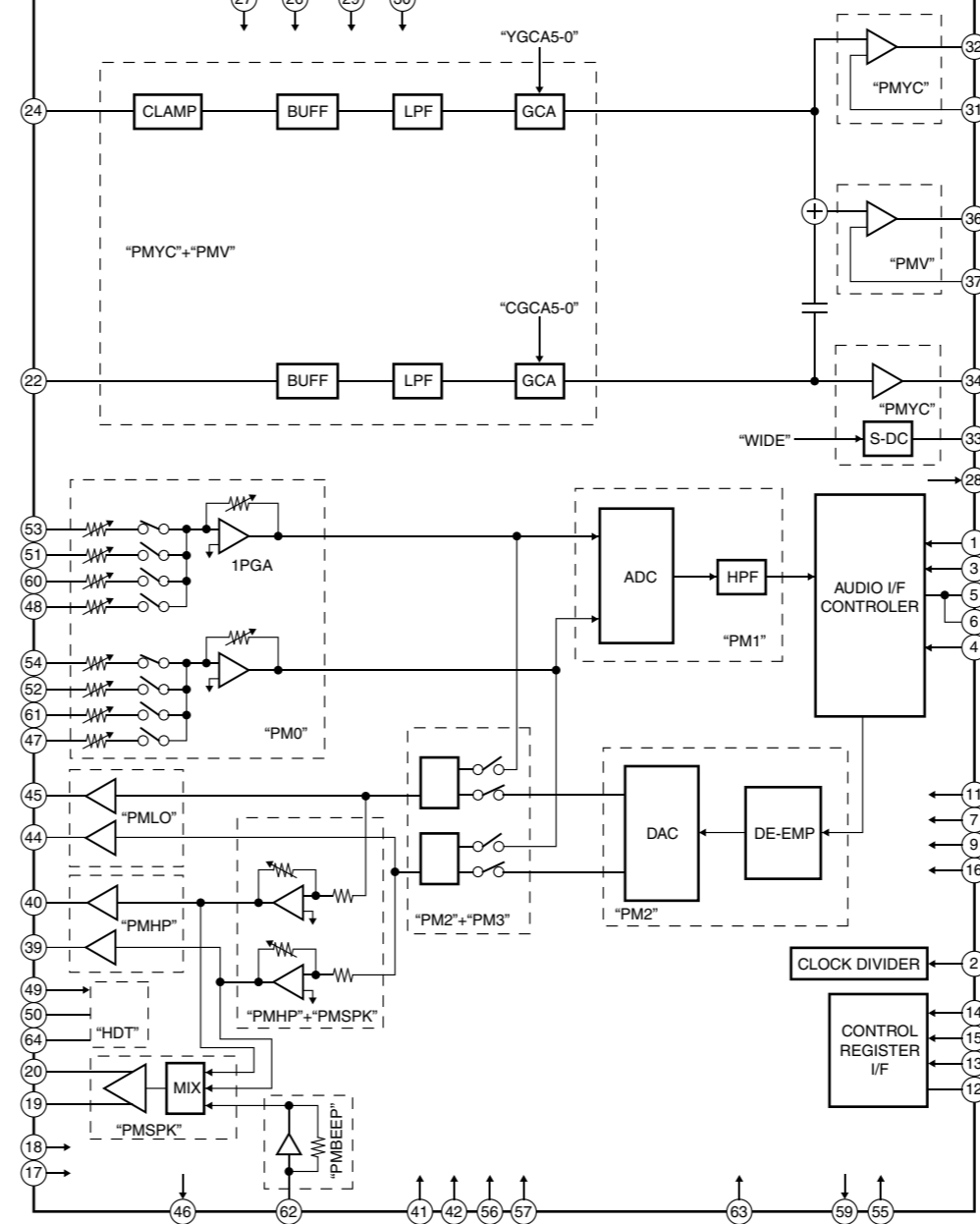
IC4009  
S-814A33AMC



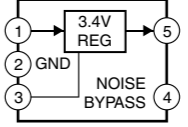
IC4010  
HD74LV1GW97A



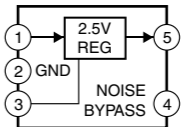
IC6003  
AK4568



IC7001  
NJM2872AF34



IC7000  
NJM2872AF25



# HITACHI

DZ-HS303A  
DZ-HS300A

TK No. 0612E